CHAPTER

5

Municipal Conservation Program

5.1 INTRODUCTION

The primary goal of the Municipal Conservation Program is to assist the Phoenix Active Management Area (AMA) in moving toward safe-yield by: (1) gradually reducing per capita water consumption, (2) encouraging the use of the best available water conservation practices, and (3) maximizing the efficient use of all water supplies including the direct use of effluent (reclaimed water). For the third management period, the Arizona Department of Water Resources (Department) is also increasing its attention on renewable supply sources, particularly the substitution of groundwater use with renewable supplies and the use of artificial recharge. The Municipal Conservation Program in the Third Management Plan encourages the equitable distribution of water in an environmentally and economically sound manner through long-range planning, cooperative regional efforts, technical assistance, and regulatory programs. The efficient use of all sources of water and replacement of groundwater sources by renewable supplies will ensure that the groundwater supply will be available when needed to replace drought-reduced surface water supplies.

Municipal water providers include cities, towns, private water companies, and irrigation districts that deliver water for non-irrigation uses (such as residential, commercial, governmental, industrial, and construction). Municipal water providers can also include well cooperatives, mobile home parks, or improvement districts. Appendix 5-A contains a complete listing of all municipal water providers located in the Phoenix AMA. The Department regulates those water providers serving more than 250 acre-feet of water for non-irrigation use annually as large municipal providers. (Figure 5-1 displays the 1998 service area boundaries of all large municipal providers). Those providers serving 250 acre-feet or less annually are regulated as small municipal providers. Municipal providers that as of January 1, 1990 were serving untreated water to at least 500 persons or supplying at least 100 acre-feet of untreated water during a year are regulated as large untreated providers.

The municipal sector in the Phoenix AMA accounts for about 38 percent of the total AMA water use. While some municipal providers are still dependent on mined groundwater, some providers in the Phoenix AMA have been successful in using a mix of groundwater, surface water from the Salt River Project, Central Arizona Project (CAP) water, and effluent. Groundwater use accounts for approximately 29 percent of the total municipal water use in the Phoenix AMA. Municipal providers in the Phoenix AMA have substantially increased direct use of CAP water from 13,036 acre-feet in 1986 to 151,791 acre-feet in 1995. Additionally, the use of other surface water supplies and effluent reuse reached 464,586 acre-feet in 1995. Some municipal providers are also using underground storage and recovery as an indirect means of utilizing renewable supplies.

Between 1985 and 1995, annual population increases of approximately 3 percent a year have been experienced in the Phoenix AMA. Significant population growth is expected during the third management period as new residents continue to move to the area. The Assured Water Supply Rules (AWS Rules), adopted by the Department in 1995, require new housing subdivisions to demonstrate that their water use will be consistent with the achievement of safe-yield in the Phoenix AMA. A.A.C. R12-15-705. This is accomplished by demonstrating that the use of renewable supplies will satisfy a majority of the current and future water demand.

Conservation programs have been implemented by municipal water providers in response to regulatory requirements of the First and Second Management Plans. While these programs have generally been successful, a firm commitment to the continued implementation of conservation measures, and implementation of additional measures, will result in further reductions in per capita use rates and increased water use efficiency in the municipal sector. Increased conservation efforts combined with region-wide distribution of renewable water supplies are needed in order to achieve the safe-yield goal of the AMA by the year 2025.

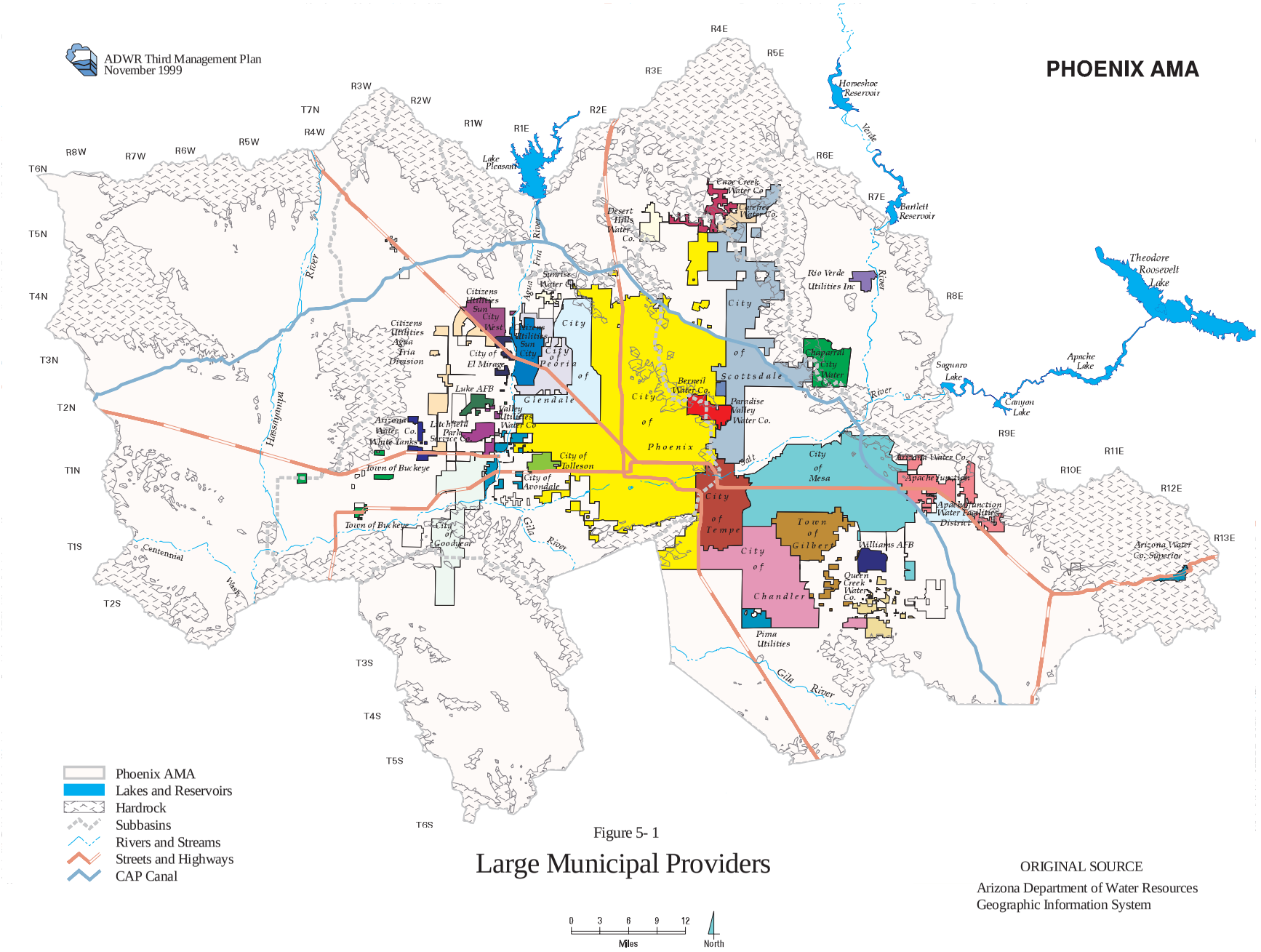

Figure 5- 1

Large Municipal Providers

ORIGINAL SOURCE

Arizona Department of Water Resources
Geographic Information System

5.2 STATUTORY PROVISIONS

5.2.1 Per Capita Requirements for Large Municipal Providers

The Groundwater Code (Code) requires that the management plans for each AMA include a conservation program for municipal uses. For the First, Second and Third Management Plans, the Code expressly mandates that the programs require reasonable reductions in per capita use. A.R.S. §§ 45-564(A)(2), 45-565(A)(2), and 45-566(A)(2). To comply with this mandate the Department developed the Total Gallons Per Capita Per Day Program (Total GPCD Program). As originally enacted, the Code did not exempt any municipal providers from the requirement to achieve reductions in per capita use. Consequently, the Municipal Conservation Program in the First Management Plan established maximum gallons per capita per day (GPCD) requirements for all municipal providers, regardless of size.

In 1986, the Legislature amended the statutes governing the Second and Third management plans to exempt "small municipal providers" from the requirement to achieve reasonable reductions in per capita use. Laws 1986, Ch. 107, §§ 2 and 3. Instead of requiring small municipal providers to achieve reductions in per capita use, the statutes require the director to establish "reasonable conservation requirements for small municipal providers." A.R.S. §§ 45-565(A)(4) and 45-566(A)(4). Until 1994, "small municipal provider" was defined in the Code as "a city, town, private water company or irrigation district that supplies water for non-irrigation use, serves less than five hundred people and supplies less than one hundred acre-feet of water for non-irrigation use during a calendar year." Laws 1986, Ch. 107, § 1. In 1994, the Legislature changed the definition of small municipal provider to "a municipal provider that supplies two hundred fifty acre-feet or less of water for non-irrigation use during a calendar year." A.R.S. § 45-561(13).

Two other statutory amendments have created exceptions to the requirement that municipal providers achieve reasonable reductions in per capita use. In 1991, the Legislature exempted large untreated water providers from the requirement to achieve reductions in per capita use. Laws 1991, Ch. 211, §§ 16, 17, and 18. In 1992, the Legislature enacted legislation requiring the director to include in each management plan a Non-Per Capita Conservation Program for large municipal providers as an optional, alternative program to the program requiring reductions in per capita use. Laws 1992, Ch. 183 §§ 5, 7, and 9. Those amendments are described in greater detail in the following two sections.

5.2.2 Conservation Requirements for Large Untreated Providers

As a result of legislation enacted in 1991, large untreated water providers are exempt from the requirement to achieve reasonable reductions in per capita use. Instead of requiring reductions in per capita use by large untreated water providers, the director is required to establish "conservation or rate of use requirements for deliveries of untreated water by large untreated water providers based on the use of the latest commercially available conservation technology consistent with reasonable economic return." A.R.S. § 45-566(A)(3).

"Large untreated water provider" is defined in the Code as "a municipal provider that as of January 1, 1990 was serving untreated water to at least five hundred persons or supplying at least one hundred acre-feet of untreated water during a calendar year." A.R.S. § 45-561(7). "Untreated water" is defined as "water that is not treated to improve its quality and that is supplied by a municipal provider through a distribution system other than a potable water distribution system.". A.R.S. § 45-561(14). A complete listing of the large untreated water providers is contained in Appendix 5-B.

5.2.3 Non-Per Capita Conservation Requirements for Large Municipal Providers

In 1992, the Legislature enacted legislation requiring the Department to include in the management plans a Non-Per Capita Conservation Program (NPCCP) as an optional, alternative program to the Total GPCD Program requiring reasonable reductions in per capita use. Each provider regulated under the NPCCP is required to implement specific residential and non-residential conservation programs for interior and exterior water use, a public education program relating to water conservation, and a program to meter most service area connections. Additionally, providers who are regulated under the NPCCP are required to either reduce their groundwater pumping consistent with the AWS Rules (A.A.C. R12-15-701, *et seq.*) or eliminate their use of mined groundwater by the year 2010. The NPCCP is a performance-based program with compliance determined by the effective implementation of stipulated conservation measures and the required groundwater reduction. For the Third Management Plan, the statutory requirements for the NPCCP are found in A.R.S. § 45-566.01.

5.2.4 Conservation Requirements for Individual Users

In addition to requiring the director to establish conservation requirements for municipal providers, the Code requires the director to establish in the Third Management Plan "such other conservation measures as may be appropriate for individual users." A.R.S. § 45-566(A)(2). An "individual user" is a person or entity who receives water from a municipal provider for a non-irrigation use. In the Third Management Plan, the director has established conservation requirements for the following individual users: turf-related facilities, large-scale cooling facilities, and publicly owned rights-of-way.

A municipal provider that receives notice of an individual user conservation requirement is responsible for complying with the requirement with respect to all individual users to which it serves water and to which the requirement applies, with two exceptions. First, the municipal provider is not responsible for complying with the requirement with respect to an individual user that has received notice of the requirement directly from the director. In that case, the individual user is responsible for complying with the requirement. Second, if the requirement is substantially identical to an industrial conservation requirement, the municipal provider is not responsible for complying with the requirement with respect to an individual user that it has identified in writing to the Department by a specified date. If the individual user was in existence when the management plan was adopted, the municipal provider must have identified the individual user to the Department at least 90 days before the management plan was adopted. A.R.S. § 45-566(B). If the individual user came into existence after the management plan was adopted, the municipal provider must identify the individual user to the Department within 90 days after it begins serving water to the individual user. If the municipal provider identifies a new individual user to the Department more than 90 days after it begins serving water to the individual user, the municipal provider will be responsible for complying with the individual user requirement until the end of the year in which it first identifies the user to the Department. See section 5-112 of the municipal conservation requirements.

5.2.5 Distribution System Requirements

The director is required to include in the Third Management Plan "additional economically reasonable conservation requirements for the distribution of groundwater by cities, towns, private water companies, and irrigation districts within their service areas." A.R.S. § 45-566(A)(5). Distribution system requirements for municipal providers consist of a requirement to limit lost and unaccounted for water and a requirement to meter deliveries. See section 5-113 of the municipal conservation requirements.

5.3 RELATIONSHIP OF SECTOR TO ACHIEVEMENT OF MANAGEMENT GOAL

Since 1985, groundwater use by municipal providers has decreased approximately 8 percent in the Phoenix AMA while total municipal water use has increased with population growth. As a percent of total

municipal water use, groundwater is becoming a smaller component, decreasing from 42 percent of total municipal use in 1985 to 29 percent of total municipal use in 1995. Municipal providers in the Phoenix AMA have expended enormous capital to acquire and build infrastructure to utilize renewable resources. Cooperative planning by the large municipalities has aided in the development of a regional recharge facility, the Granite Reef Underground Storage and Recovery Project, and the establishment of intergovernmental agreements to provide for the transportation, treatment, and use of renewable supplies. Table 5-1 illustrates the municipal sector's contribution to overdraft in the Phoenix AMA for the years 1985, 1990, and 1995.

TABLE 5-1
MUNICIPAL SECTOR OVERDRAFT ESTIMATES
1985, 1990, AND 1995
PHOENIX ACTIVE MANAGEMENT AREA
(Acre-Feet)

	1985	1990	1995
Total Water Use	657,191	782,474	869,962
Groundwater Use	276,541	292,047	253,585
Incidental Recharge	52,866	57,895	61,887
Overdraft	***223,675***	***234,152***	***191,698***

Table includes untreated water providers, small municipal providers, large municipal providers, estimated exempt wells, and estimated Indian Municipal & Industrial water use.

By 2025, the municipal sector is expected to surpass the agricultural sector and become the largest water use sector in the Phoenix AMA primarily because of continued urban growth and development. With the adoption of the AWS Rules, the municipal sector has been given a greater responsibility in the achievement of safe-yield. It is assumed that most of the large municipalities will be designated as having an assured water supply by the end of the second management period, accounting for the majority of the water use in this sector (approximately 69 percent). These large municipalities are currently the principal users of renewable supplies. Although these providers will have the ability to phase in new growth on an allocation of groundwater (limited to 7.5 multiplied by the 1994 total water use), most large municipal providers currently utilizing renewable resources have indicated that they will reserve this allowable groundwater for times when surface water availability is limited (due to factors such as canal dry up, peak daily demands, treatment facility shut downs, and drought).

Although the AWS Rules require the use of renewable supplies for new growth, they do not address residual overdraft (groundwater mining allowed under the Code) associated with existing municipal uses or new municipal uses on unsubdivided lands. Unless changes are made to the Code or the AWS Rules, these uses can be addressed only through implementation of water conservation measures, including renewable supply incentives. In the Phoenix AMA, the groundwater demand associated with existing municipal users is approximately 250,000 acre-feet per year. Of this annual demand, approximately 139,000 acre-feet is associated with municipal users that have not applied for a Designation of Assured Water Supply (Designation of AWS). It will not be possible to reach safe-yield if this demand continues to be met entirely with mined groundwater.

Primarily because of institutional and geographic constraints, some providers, particularly private utilities, have not applied to be designated as having an assured water supply. A new subdivision may be served by an undesignated provider only if it obtains a Certificate of Assured Water Supply (Certificate of AWS) and

demonstrates the use of renewable supplies for the new development. A new subdivision may demonstrate the use of renewable supplies by becoming a member of the Central Arizona Groundwater Replenishment District (CAGRD), which replenishes groundwater used by a member in excess of the amount allowed under the AWS Rules. The availability of the CAGRD as a mechanism to demonstrate the use of renewable supplies allows small cities and private water companies to grow and establish sufficient demand and tax base to develop renewable supply infrastructure.

The overall impact of the municipal sector on overdraft should decrease over time with the implementation of the AWS Rules. However, because of the size and diversity of the Phoenix AMA, the Department needs to focus its water management efforts on a more localized basis in addition to striving to achieve safe-yield on an AMA-wide basis. Different areas of the AMA are utilizing groundwater or renewable supplies at various levels. While some areas of the AMA may be experiencing increases in groundwater levels, other areas have severe declines. Subbasin or subarea management is an alternative that the Department will analyze throughout the third management period.

5.4 ASSURED WATER SUPPLY PROGRAM

The Code requires persons proposing to offer subdivided lands for sale or lease within an AMA to demonstrate that the proposed subdivision has an assured water supply. A.R.S. § 45-576. If a subdivider fails to demonstrate that a proposed subdivision has an assured water supply, the plat for the subdivision may not be approved by a city, town, or county, and the State Real Estate Commissioner may not issue a public report authorizing the sale or lease of the subdivided lands. A.R.S. § 45-576 (B) and (C).

There are two mechanisms for demonstrating that a proposed subdivision has an assured water supply. First, the subdivider may apply for and obtain a Certificate of AWS from the director. Second, the subdivider may obtain a written commitment of water service for the subdivision from a city, town, or private water company that the director has designated as having an assured water supply. A.R.S. § 45-576(A). For both of these purposes, "assured water supply" means that sufficient water of adequate quality will be continuously available to meet the water needs of the proposed use for at least 100 years; that the projected use is consistent with the management plan and achievement of the management goal for the AMA; and that the financial capability has been demonstrated to construct the water facilities necessary to make the supply of water available for the proposed use, including a delivery system and any storage facilities or treatment works. A.R.S. § 45-576(I).

In 1995, the Department adopted rules to carry out the purposes of the assured water supply statute. A.A.C. R12-15-701, *et seq*. The AWS Rules specify in detail what an applicant for a Certificate of AWS or a Designation of AWS must demonstrate. Of particular relevance to the Municipal Conservation Program are the requirements for demonstrating that a proposed use is consistent with the management plan and achievement of the management goal for the AMA.

5.4.1 Consistency With Management Goal

In order to demonstrate that a proposed use is consistent with the management goal for the Phoenix AMA, the AWS Rules require applicants to demonstrate that renewable supplies, including groundwater replenished by the CAGRD, will be used to satisfy most of the water demand of the development or water service area for 100 years. A.A.C. R12-15-705. For a municipal provider applying for a Designation of AWS, this means that most of the water demand for both existing and new customers must be met with water supplies other than mined groundwater.

5.4.2 Consistency With Management Plan

In order to demonstrate consistency with the AMA's management plan, the AWS Rules generally require that an applicant be in compliance with its management plan requirements. For municipal providers, the applicable management plan requirements are the municipal provider conservation requirements set forth in section 5.12 of this chapter. Thus, if a municipal provider applying for a Designation of AWS is regulated under the Total GPCD Program, the provider must either be in compliance with its total GPCD requirement, or with the terms of a stipulation and consent order entered into to remedy non-compliance with the GPCD requirement, in order to demonstrate consistency with the management plan.

An applicant for a Certificate of AWS is not subject to the municipal provider conservation requirements set forth in the management plan because the applicant is not a municipal provider as defined in A.R.S. § 45-561. However, certain uses that may be associated with a certificate application, such as turf-related facilities, large-scale cooling facilities and landscaping or water features in publicly owned rights-of-way, are subject to the individual user requirements in section 5-112(A) of the municipal conservation requirements if groundwater will be used. For all individual users, whether served by a designated or undesignated provider, either the entity delivering water or the individual user (e.g., homeowner's association, turf-related facility owner, etc.) will be responsible for compliance with the individual user requirements.

The water use of a new subdivision will also affect a large municipal provider's ability to meet its GPCD requirement. While individual users or the entity delivering water to them are responsible for meeting the individual user requirements, new subdivisions should be developed in a manner consistent with the municipal provider's conservation requirements in the management plan. This could be accomplished by some relatively simple and voluntary efforts by the certificate applicant or homebuilder. A few examples are:

- Establish Conditions, Covenants and Restrictions or other conditions that will limit water-intensive landscaping within the subdivision
- Provide lot buyers with written water conservation information, including irrigation management of automatic irrigation timers
- Landscape model homes in accordance with Xeriscape™ principles
- Feature water conservation fixtures and appliances in model homes
- Limit water-intensive vegetation in common areas to those areas that provide significant recreational benefits
- Provide low water use landscaping packages to home buyers
- Locate hot water heaters to minimize long hot water pipe runs or install looped systems

An application for a Certificate of AWS requires submittal of general information to allow the Department to estimate the water demand of the subdivision. These include submittal of any Conditions, Covenants and Restrictions or other conditions that will limit exterior water demand and any proposed conservation practices, policies, devices, etc. that may be utilized.

5.4.2.1 Consistency With Management Plan Criteria for Applicants for Certificates of Assured Water Supply

Some subdivisions include a golf courses and other non-residential water uses. Demands associated with non-residential use are considered to be part of the subdivision offering if they will be part of the common promotional plan and they are covered by the official definition of a subdivision (A.R.S. § 32-2101). Because of the large volume of water associated with the needs of a golf course, a person applying for Certificate of AWS must demonstrate the following:

That any new golf courses to be included within the development plan will be designed to comply with any applicable turf-related facility conservation requirements contained in Chapter 6 of this management plan. To make this demonstration, the applicant shall describe in its application the design and landscaping plans for any golf courses that will be included within the development.

When the AWS Rules are revised, more specific Consistency with Management Plan requirements for Certificates of AWS may be included.

5.4.3 Assured Water Supply Role in the Municipal Conservation Program

The AWS Rules are expected to result in reductions in mined groundwater use and greater reliance on renewable water supplies compared to pre-rule water use. This will be a great benefit to the Phoenix AMA as groundwater supplies are preserved for future uses. However, as the utilization of renewable supplies increase as a result of the AWS Rules, the Municipal Conservation Program will continue to focus on the efficient use of all water supplies. As growth in the Phoenix AMA continues, the stress on renewable supplies will also increase. The programs developed for the Third Management Plan are aimed at increasing the efficiency of water use in the municipal sector. It is the goal of the Department to use the AWS Rules along with the Municipal Conservation Program and incentives for the use of renewable supplies to bring the AMA closer to the achievement of safe-yield.

5.5 FIRST AND SECOND MANAGEMENT PLANS

For the First and Second Management Plans, the Department was required by statute to focus on per capita reductions as a mechanism to move the municipal sector toward safe-yield. Reductions in GPCD rates result in conservation of the groundwater supply that can be preserved for times of drought or reserved for future growth. To achieve reductions in per capita water use, the Total GPCD Program was established as the base program for all large municipal providers.

In developing the Total GPCD Program, the Department began with a very basic approach in the First Management Plan and moved to addressing unique water use characteristics in the Second Management Plan. Through each management period, the Department has addressed water management concerns by including incentives for the use of renewable supplies, providing technical and financial assistance, and revising programs by updating data and assumptions using new information on current technologies and programs. In addition to the Total GPCD Program, voluntary alternative programs that are not based solely on per capita reductions were developed in the Second Management Plan for providers able to limit or reduce reliance on groundwater supplies. The intent of these programs is to allow demand flexibility if groundwater use is limited to a historic amount or reduced over time.

5.5.1 First Management Plan Approach

The approach to municipal conservation in the First Management Plan was a reduction from the base year GPCD rate for all water providers. The higher the base year GPCD rate, the greater the required reduction in per capita use. The 1980 census population and total water use were used to calculate each provider's base year GPCD use rate. A First Management Plan total GPCD requirement was then calculated, which, for providers with high per capita use (greater than 350 gallons per capita per day) in the base year, was 11 percent lower than their base year GPCD rate. Providers with moderate per capita use (between 140 and 350 gallons per capita per day) were assigned a GPCD requirement that was 6 percent lower than their base year GPCD rate. Providers at or under 140 GPCD in 1980 were not required to conserve further during the first management period, but were not permitted to use more than 140 GPCD per year. Additional requirements for distribution systems, individual users, and monitoring and reporting were also components of the Municipal Conservation Program during the first management period.

Providers were given the opportunity to request a modification of their First Management Plan total GPCD requirement based on unique circumstances within their service area. Adjustments were granted for factors such as acquisition of all or a portion of another provider's service area, increasing non-residential uses within the service area not in existence when the requirements were adopted, and technical or factual errors made in calculating the requirements.

Both small and large providers were regulated in the same manner in the first management period. Additionally, a special provider category was established for service areas that were dominated by non-residential/institutional uses (e.g., hospitals, schools, correctional facilities, or military installations) whose water use patterns and conservation potential could not be adequately characterized by per capita rates. The special provider program established a residential GPCD requirement along with non-residential measures commensurate to the uses within the service area.

5.5.2 Second Management Plan Approach

During the development of the Second Management Plan, the Department recognized that the unique characteristics and growth patterns within each service area have a great influence on the provider's ability to reduce per capita use and help achieve the goal of safe-yield. It was recognized that new users should be more efficient than existing water users due to the installation of high-efficiency plumbing fixtures in new residences that comply with federal, state, and local ordinances.

The approach to setting GPCD requirements for large municipal providers in the Second Management Plan was based on an analysis of conservation potential for each service area, using 1985 as the base year. Conservation potential for existing residential uses was estimated based on the comparison of existing water use patterns to assumed levels of savings associated with changing attitudes and implementation of selected conservation programs. Providers with relatively high GPCD rates were assumed to have greater conservation potential while those whose residential GPCD fell under a certain level were assumed to have minimal or no conservation potential. Estimated savings assumptions, based on documented conservation programs successfully applied in Arizona, California, and other regions in the United States, were then applied to the existing residential GPCD rate for each large municipal provider to develop a GPCD requirement for existing residential uses. New residential water users were assumed to come in at model use rates established by the Department for new residential housing based on the latest commercially available technology such as low-flow plumbing fixtures and low water use landscaping practices. Non-residential uses were held constant from base year non-residential water use levels with an additional 7 percent reduction to be achieved by 2000. Lost and unaccounted for water was also held constant at base year levels, but not to exceed a maximum of 10 percent.

Finally, a single total GPCD requirement was established for each large municipal provider combining the assumptions for existing residential, new residential, non-residential, and lost and unaccounted for water. Intermediate GPCD requirements were established for 1992 and 1995 to encourage providers to make progress in conservation efforts throughout the management period, with achievement of the final GPCD requirement in 2000.

Because non-residential uses continue to increase, and in most instances are not subject to assured water supply requirements limiting groundwater use, modifications to the total GPCD requirement for disproportionate increases in non-residential growth were not allowed in the Second Management Plan. Instead, the Department established the Alternative Conservation Program (ACP) that regulates providers based on a residential per capita requirement and the implementation of specific non-residential conservation measures. In order to participate in this more flexible program, providers were required to limit their groundwater withdrawals to a historic level, which required them to utilize renewable resources or retire groundwater rights to serve new demand. Additionally, providers that served predominantly non-

residential/institutional uses were allowed to apply for the Institutional Provider Program (IPP), which replaced the special provider category established in the First Management Plan.

In the Second Management Plan, small municipal providers were not assigned a total GPCD requirement. Instead, because of their limited conservation potential and small proportion of overall municipal demand, small municipal providers were required to comply with the following requirements: minimize waste, maximize efficiency of outdoor watering, encourage reuse, and reduce the GPCD usage in their service areas.

5.5.3 Overview of Changes During the Second Management Period

Since 1990, the Second Management Plan has been modified twice. In general, changes were made to the Municipal Conservation Program to provide incentives for the use of non-groundwater sources, to provide technical assistance to the regulated community, and to add a Non-Per Capita Conservation Program. Additionally, a legislative change created an incentive for municipal providers to use groundwater withdrawn pursuant to approved remedial action projects.

5.5.3.1 Management Plan Modifications

5.5.3.1.1 First Modification (1991):

An exclusion for the use of untreated CAP water was included in the first modification. Providers who were willing to make a commitment to ultimately serve effluent to a non-residential customer, but did not yet have access to or the ability to distribute effluent immediately, were allowed to serve untreated CAP water to the customer without having that water counted in the total GPCD rate for up to ten years. This incentive was adopted to encourage construction of the necessary non-potable distribution lines before the effluent is available, to expedite the future use of effluent within the AMA.

The Conservation Assistance Grants Program was adopted for the Second Management Plan to provide financial, planning, technical, and other support and services to all regulated sectors. Each year grants are awarded to support education, projects, and research that promote water conservation. The funds to support the grants program come from a portion of the groundwater withdrawal fees paid by all persons in the AMA that pump groundwater.

5.5.3.1.2 Second Modification (1995):

Legislation passed in 1994, and incorporated into the second modification, redefined small municipal providers as those water providers serving 250 acre-feet of water or less annually. Previously, a small municipal provider was defined as a water provider serving 100 acre-feet of water or less annually or a water provider that served a population of 500 people or less. The intent of this legislation was to allow the Department to focus its conservation efforts on providers with significant water use and greater conservation potential. In the Phoenix AMA, passage of this legislation reduced the number of large providers from 48 to 32. However, since that time, two providers have increased their water service and have transitioned back into the large municipal provider category.

The NPCCP, adopted by the Legislature in 1992, exempts qualified large municipal providers from per capita conservation requirements by substituting reasonable conservation measures (RCMs) targeting both residential and non-residential users, for per capita requirements. ARS § 45-565.01(A). Providers who elect to enter this program are required to gradually eliminate the use of mined groundwater in their service areas consistent with the program requirements.

The second modification also included an incentive for the use of renewable supplies that allowed large municipal providers whose annual groundwater use was 30 percent or less of their total annual water use to remain at their Second Management Plan First Intermediate GPCD requirement. This incentive could be used in each year that a provider achieved the groundwater limitation standard of 30 percent or less, through the year 1999.

5.5.3.2 Legislative Change

In 1997, legislation was enacted providing an incentive for municipal providers to use groundwater withdrawn pursuant to an Environmental Protection Agency (EPA) or Arizona Department of Environmental Quality (ADEQ) "approved remedial action project." Prior to the passage of this bill, the withdrawal and use of groundwater, regardless of its quality, was counted as groundwater use in the determination of compliance with the management plan conservation requirements (see Chapter 10). This legislation requires the Department to account for remediated groundwater withdrawn pursuant to an approved remedial action project in the same manner as surface water for determining compliance with the management plan conservation requirements adopted for the Third, Fourth, and Fifth Management Plans. Thus, this groundwater is counted as surface water in the compliance determination. Laws 1997, Ch. 287, § 51(B). Although the 1997 legislation did not expressly apply to conservation requirements adopted in the Second Management Plan, an amendment passed in 1999 applies these accounting principles to the Second Management Plan. Laws 1999, Ch. 295, § 49. The Department has indicated through a substantive policy statement how it will apply the incentive to Second Management Plan conservation requirements beginning in 1998. Section 5.8 contains a discussion of this incentive as it applies to the Third Management Plan.

5.6 MUNICIPAL PROGRAM ISSUES

Throughout the preparation of the Third Management Plan, extensive input from the water-using community was obtained to identify the issues to be addressed in the development of the Third Management Plan. This section provides an overview of the issues raised by the Department and the AMA water providers.

5.6.1 Private Water Company Issues

Some municipal water providers regulated under the Municipal Conservation Program are privately owned companies separate from the city, town, or county in which they are located. While local plumbing and landscape ordinances may apply within the private water company service area, the water company itself lacks the authority to enact ordinances regulating water use by its customers. In addition to being regulated by the Department, private water companies are regulated by the Arizona Corporation Commission (ACC), an elected body whose mission includes exercising exclusive state regulatory authority over public service corporations (public utilities) in the public interest. The ACC monitors the operations of approximately 350 private water utility companies throughout Arizona, reviewing company financial records and recommending revenue requirements and rates and charges to be collected. The regulatory responsibilities of the ACC are fully defined in Article XV of the Arizona Constitution and §§ 40-201, *et seq.*, Arizona Revised Statutes (including A.R.S. § 40-250 requiring that all public service corporations obtain ACC approval before establishing or changing any rate).

Private water companies have raised several issues regarding the relationship of the Department's requirements and the ACC's review of rate recovery associated with the requirements. The most significant issues identified include: (1) the perception of uncertainty in the ability to recover the holding costs of CAP subcontracts and financing the construction of facilities for receipt and use of renewable supplies and (2) the impact of the ACC's position in rate cases that implementation of conservation

programs is discretionary because the Department does not identify specific conservation programs or measures needed to be carried out by the provider.

These issues have been extensively reviewed and discussed by the Department staff, private water company representatives, and ACC staff. The ACC has indicated that "although they cannot guarantee recovery of costs prior to their incurrence" they would consider cost recovery for the use of renewable supplies and the implementation of conservation measures, applying the principles of "used and useful" and "least-cost alternative." In the past, these principles have meant that a provider would have to be actively providing a resource in order to recover costs, and any conservation measure implemented would have to be the most cost-effective option before the recovery of costs would be allowed. Private water companies argue that these principles do not guarantee cost recovery, as they are considered by the ACC on a case-by-case basis.

During the development of the Third Management Plan, the Department explored the possibility of establishing a municipal conservation program designed exclusively for private water companies. In order to meet the goals of the Department and obtain the support of the ACC, the Department considered a program that would mandate specific conservation measures and reduce reliance on groundwater supplies. Upon further examination, it was determined that additional statutory authority would be needed to implement such a program. It was decided by the Department not to pursue this action at this time. However, Department staff, with the cooperation of the regulated community, will continue to explore options. Some of these options include continued dialogue between the two agencies aimed at establishing a united strategy in achieving the most economically efficient reduction in reliance on mined groundwater by private water companies, including providing more certainty of cost recovery for providers.

5.6.2 Renewable Water Supply Use

In the first and second management periods, the management plans focused primarily on increasing water use efficiency through conservation regulations. The AWS Rules have increased the emphasis on renewable supply requirements for municipal growth. Renewable supplies available to Phoenix AMA water providers include CAP water, Salt and Verde River water, Agua Fria River water, and effluent. Water use efficiency through conservation, increased direct use of renewable water (including effluent), restrictions on inappropriate uses water, and artificial recharge are each critical to ensuring a secure and sustainable water supply. A number of providers argue that these goals conflict or that insufficient resources are available to pursue both conservation and renewable supply acquisition and development simultaneously.

Municipal providers have also expressed the concern that the incentives for utilization of renewable water supplies in the management plans are inadequate. Although the AWS Rules have increased the emphasis on the use of renewable supplies, there is a perceived need to provide additional encouragement to utilize renewable supplies. Some have recommended that the use of renewable resources should be facilitated by exempting such deliveries from conservation requirements or discounting their use in any compliance calculation. However, long-term demand and supply projections indicate that Phoenix AMA providers will need to fully utilize their CAP water, and that lower GPCD rates will be necessary to attain and maintain safe-yield. The Department recognizes the importance of encouraging the use of renewable supplies while continuing to stress that all available water supplies must be used efficiently through effective conservation programs.

A number of incentive programs for the use of renewable supplies were included in the Second Management Plan, including the effluent use incentive, the CAP exclusion, and the alternative programs (see Table 8-6 in Chapter 8 for a detailed list of all incentives). Several additional incentive options were considered for inclusion in the Third Management Plan. However, with the creation of the Arizona Water Banking Authority, which is expected to store unutilized CAP water, additional incentives for CAP

utilization are not included in this plan. Although direct effluent use by municipal providers is completely exempt from conservation requirements, a large portion of the effluent available in the Phoenix AMA is not utilized (approximately 60 percent). A task force may be established to review the issues associated with ways to maximize the likelihood of achieving safe-yield, the tools needed to manage water on a more localized basis, and the appropriateness of developing additional regulatory incentives. It may be necessary to develop both legislation and modifications to the management plan to adopt a comprehensive strategy that addresses these various concerns.

5.6.3 Total Gallons Per Capita Per Day Program Issues

Municipal providers bear the responsibility of ensuring efficient water use by the persons to whom they deliver water (residential and non-residential water customers). For providers regulated under the Total GPCD Program, compliance is determined by comparing the provider's actual GPCD usage rate in a year with the provider's total GPCD requirement for the year. When the Second Management Plan total GPCD requirements were assigned in 1990, the Department received numerous requests for administrative review. Adjustments were requested for a number of reasons, including inaccurate population projections, disproportionate seasonal population increases, disproportionate increases in non-residential growth, and inaccurate assumptions for new residential growth (i.e., lot size and exterior landscape patterns).

Population projections for 1990, 1995, and 2000 were used in the Second Management Plan to calculate total GPCD requirements for each large municipal provider. Several issues arise when using population projections, including: (1) the economic forecast at the time the projections are made can affect the projections, (2) the ratio of single family to multifamily projections can influence the achievement of the new residential component of the per capita requirements, and (3) the way a provider's service area population actually grows in relation to the projections can make it easy or difficult for the provider to achieve its requirements.

To address these uncertainties, the Department did not use population projections to calculate GPCD requirements for the Third Management Plan. Instead, an annual GPCD requirement will be calculated using a "component" approach based on the actual new single family and multifamily populations. This approach is discussed in greater detail in section 5.7 of this chapter.

Seasonal visitors are people who reside in Arizona during part of the year but who do not claim residency in Arizona. Variations from year-to-year in seasonal population can skew GPCD rates to make it appear that water use is becoming more or less efficient. Providers who can demonstrate a disproportionate increase in seasonal population can request an administrative review of the annual population estimate.

In most cases, providers have a wide range of lot sizes that average approximately 7,500 square feet. For that reason, the models for new development are based on an average single family lot size of 7,500 square feet. Some service areas are dominated by larger lots due to development preferences and the availability of inexpensive urban irrigation. Large lots with considerable landscapable areas tend to increase the residential GPCD rate because more water use is divided among fewer people than if development were of a higher density. Providers who can demonstrate a disproportionate amount of large lots can apply for administrative review.

For the municipal sector, the ratio of residential to non-residential demand can impact the GPCD rate of a water provider. Adding a new large non-residential customer can drastically increase the overall demand within a service area and can negatively impact a provider's ability to achieve compliance with the total GPCD requirement. The First Management Plan contained a provision that allowed a provider experiencing a disproportionate increase in non-residential use to apply for a modification to its total GPCD requirement to accommodate the increased non-residential use. The Second Management Plan did not contain such a provision because it contained several other provisions that would allow a provider to

serve disproportionately increasing non-residential uses while remaining in compliance with its conservation requirements. For instance, deliveries of effluent, other than effluent recovered outside the area of impact of an underground storage project, were excluded when determining a provider's compliance with its total GPCD requirements. Thus, a provider could serve an unlimited amount of effluent to a new non-residential customer without the service having an impact on the GPCD usage rate. Additionally, providers who used renewable supplies could apply for one of the alternative programs that did not impose GPCD requirements on non-residential uses, but which did limit the amount of groundwater that could be used during the year.

Some providers have pointed out that the Department's current position on this issue must be addressed in the future in light of the AWS Rules. Providers who obtain a Designation of AWS are required to reduce their groundwater use for all water users, existing and new, and the concern of a disproportionately increasing non-residential GPCD rates on groundwater is becoming a limited argument. In the Third Management Plan, the Department will continue to maintain its position to not grant an increase in the GPCD requirements for disproportionate non-residential growth. This is due to the availability of the alternative programs that allow providers who have committed to the use of renewable supplies the flexibility to address this situation.

5.7 THIRD MANAGEMENT PLAN MUNICIPAL CONSERVATION PROGRAM

Conservation requirements have been established pursuant to the statutory provisions of the Code for large municipal providers, small municipal providers, and large untreated water providers. This section will detail the requirements that have been developed for the Third Management Plan.

5.7.1 Conservation Requirements for Large Municipal Providers

In order to establish conservation requirements for large municipal providers in the Second Management Plan, the Department identified existing water use patterns and service area characteristics that influence a provider's water conservation potential. Assumptions about future service area population growth, water supply, and demand were also included in the analysis. This assessment was referred to as the "municipal provider profile." Targets for each water use sector or component (existing residential, new residential, non-residential and lost and unaccounted for water) were combined to establish a preassigned total GPCD requirement based on projected population growth for the years 1992, 1995, and 2000. The two intermediate dates, 1992 and 1995, were established to allow a phase-in to achieve the final Second Management Plan requirement in 2000.

For the Third Management Plan, the Department used a similar approach to identify service area water use characteristics. Information gathered through annual reports, annual population estimates supplied by the Maricopa Association of Governments (MAG), and individual interviews conducted to determine existing water conservation programs were used to determine water conservation potential for each large municipal provider.

The Code requires additional reasonable reductions in per capita use by large municipal providers in the Third Management Plan. Pursuant to this statutory requirement, the Department will calculate a total GPCD requirement for each large municipal provider. However, the Department will not initially combine the water use components into a preassigned total GPCD requirement. Instead, in order to eliminate the uncertainty of population projections, each component is assigned a separate water use rate with a total GPCD requirement calculated each year based on actual population growth within the service area. As in the Second Management Plan, there will be two intermediates and a final GPCD requirement for all large municipal providers. Each large municipal provider will be noticed of its GPCD components for its service area and the method for calculating a total GPCD requirement. Providers may apply for a variance from or an administrative review of the conservation requirements within 90 days after the notice is given.

Alternatively, a large municipal provider may apply for one of the alternative programs: the Non-Per Capita Conservation Program (NPCCP), the Alternative Conservation Program (ACP), or the Institutional Provider Program (IPP). Large municipal providers who do not apply for an alternative program will be regulated under the Total GPCD Program.

5.7.1.1 Total Gallons Per Capita Per Day Program

As in previous management periods, the base municipal program for the Third Management Plan will be the Total GPCD Program. Each large municipal providers regulated under this program must limit its annual gallons per capita per day water usage within its service area to the amount allowed under their total GPCD requirement.

5.7.1.1.1 Total Gallons Per Capita Per Day Program Development

For the third management period, an annual total GPCD requirement will be calculated using a "component method." The components of the total GPCD requirement are: existing residential use, new single family interior residential use, new single family exterior residential use, new multifamily interior residential use, new multifamily exterior residential use, non-residential use, and lost and unaccounted for water. Each component has an assigned "per capita per day" or "per housing unit per day" target use rate based on factors including: an assessment of the conservation potential of existing residential users, model use demands in new housing units based in part on plumbing code requirements and efficient exterior water use practices, a constant non-residential GPCD rate, identical to the rate assigned in the provider's total GPCD requirement in the Second Management Plan and system losses and unmetered uses in each year up to a limit of 10 percent. The component calculation is described and illustrated in more detail in Appendices 5-C.1 and 5-C.2. The sum of the component volumes will be multiplied by the annual estimated population or housing units in the service area each year (supplied by MAG). The resulting allowable volume will be compared to the actual amount of water withdrawn, diverted, or received in the calendar year to determine compliance.

5.7.1.1.1.1 Analysis of Existing Residential Conservation Potential

Conservation potential, based on existing water use, is an estimate of the amount of a reduction in water use that can be achieved from implementing reasonable conservation measures or programs for each water provider. To determine the residential conservation potential of each large provider in the Second Management Plan, the Department established a base year to determine water use rates for existing water users, then analyzed residential water use patterns and then selected appropriate conservation measures (based on an analysis of existing conservation measures). This analysis resulted in a GPCD reduction for existing users that was factored into the Total GPCD requirement for each provider.

In the development of the Third Management Plan, staff conducted a detailed analysis of all assumptions used to estimate the conservation potential of existing residential users in the Second Management Plan. This included an extensive inventory and analysis of available water conservation devices, measures, and programs. Adjustments were made to the assumptions for water savings, market penetration, and installation rates based on documented water savings from water conservation programs throughout the United States, including the Phoenix area and the Southwest. The Department also analyzed the existence of conservation programs within each service area and additional conservation measures that could be implemented during the third management period. Even with the existence of current conservation measures, the Department assumes some potential still exists for savings, even in service areas that have had programs in place. Water use for the years 1992 through 1996 for each provider was averaged and disaggregated into residential, non-residential, and lost and unaccounted for water use. The average water use for existing residential water users, both single family and multifamily, was then identified (see Appendix 5-D). Next, four categories were established to express existing single family and existing

multifamily conservation potential (the ability to achieve water savings through implementation of conservation programs): no potential, minimum potential, moderate potential, or maximum potential.

Table 5-2 illustrates the interior single family and interior multifamily GPCD and the exterior single family gallons per housing unit per day (GPHUD) used to establish the conservation potential categories. Each provider's existing residential average water use for the year's 1992 through 1996 was compared to the numbers in Table 5-2 to determine the conservation potential for each service area. After the provider's conservation potential was determined (see Appendix 5-E), a flat reduction of 0, 3, 5, or 7 percent was applied to each conservation potential category, respectively. Note: a flat rate of 77 GPHUD was allotted for the multifamily exterior sector. No conservation potential was assumed from this rate. The reduction assigned to each provider assumes the potential water savings for implementation of conservation measures commensurate with the provider's conservation potential. Finally, the water savings subtracted from the existing residential GPCD for each provider resulted in the existing residential component (see Appendix 5-F).

TABLE 5-2
THIRD MANAGEMENT PLAN
EXISTING RESIDENTIAL CONSERVATION POTENTIAL
PHOENIX ACTIVE MANAGEMENT AREA

	INTERIOR Single Family/Multifamily GPCD	EXTERIOR Single Family GPHUD
No Potential	0 - 57	0 - 117
Minimum Potential	58 - 74	118 - 178
Moderate Potential	75 - 87	179 - 256
Maximum Potential	>87	>256

GPCD = Gallons Per Capita Per Day
GPHUD = Gallons Per Housing Unit Per Day

5.7.1.1.1.2 Models for New Residential Users

For new residential water users (those residential users who begin to receive water from a municipal provider after 2000) the Department utilized a model-based approach similar to the one used in the Second Management Plan. Staff conducted an analysis of all assumptions used to generate the models for new residential interior and exterior water use. Current water fixture flow rates, existing technology, and behavioral patterns were evaluated and incorporated into the updated models for interior and exterior water use. These two models are described below.

INTERIOR RESIDENTIAL WATER USE MODEL The interior water use model for new residential development was updated from the Second Management Plan to reflect performance specifications for toilets, showerheads, and faucet aerators in current local, state, and federal plumbing codes; use of water-efficient clothes washers and dishwashers; and to show documented behavioral patterns. It should be noted that low-flow toilet requirements are limited to 1.6 gallons per flush. However, to compensate for occasional double-flushing, the model rate for toilets was adjusted to 1.7 gallons per flush. A miscellaneous water use component, which was not included in the Second Management Plan, was added to allow for reasonable water consumption associated with fixtures, appliances, and behavior not specifically addressed as a model component. Behavioral patterns affecting the duration and frequency of water use were reevaluated and adjusted based on data obtained from residential flow trace analyses

conducted in the Phoenix area and other areas of the United States sponsored by the American Water Works Association Research Foundation. As a result, an interior residential model use rate of 57 GPCD, which is an increase from the model use rate of 51.4 GPCD assumed in the Second Management Plan final total GPCD requirement, will be used as the interior residential component for all new residential water users through the third management period (see Table 5-3). This increase is based on the current data and adjustments for local climate.

EXTERIOR RESIDENTIAL WATER USE MODEL Models developed in the second management period for exterior water use in new single family developments were based on average swimming pool demand, evaporative cooling demand, and efficient landscaping needs. The same approach, using up-to-date information, will be used in the Third Management Plan.

TABLE 5-3
THIRD MANAGEMENT PLAN
SINGLE FAMILY AND MULTIFAMILY
INTERIOR WATER USE MODEL NEW RESIDENTIAL DEVELOPMENT
PHOENIX ACTIVE MANAGEMENT AREA

Device	Model Assumptions	Model Use Rate
Toilet	5 flushes/person/day x 1.7 gallon/flush	9 GPCD
Shower	7.9 minutes/shower x 2.50 gpm x 0.9 shower/person/day	18 GPCD
Bath	32.5 gallons/bath x 0.10 bath/person/day	3 GPCD
Faucets	Kitchen & Bathroom 2.5 gpm x 4.0 minutes/person/day	10 GPCD
Dishwasher	9.81 gallons/load x 0.20 loads/person/day	2 GPCD
Clothes Washer	30.3 gallons/load x 0.30 loads/person/day	9 GPCD
Miscellaneous		6 GPCD
TOTAL		**57 GPCD**

Numbers may not calculate due to rounding

Because exterior water use is not dependent on the number of persons in the household, the exterior model is expressed in GPHUD. Unlike the Second Management Plan, which used three landscaping water use models (see Second Management Plan, Chapter 5, p.127), the approach for the Third Management Plan assumes that the same potential exists for all new housing units to implement appropriate landscaping patterns for the local climate and utilize efficient water use practices. Thus, instead of three separate models, the Phoenix AMA used a single model for all new residential housing units.

Water use and landscaping assumptions are based on the potential for the provider to promote the use of, provide incentives for, and educate new residents on the benefits of using low water use plants and utilizing efficient irrigation practices (including the use of drip irrigation and proper management of irrigation timers). The single family exterior water use model is based on the average lot size for the Phoenix AMA of 7,500 square feet. Demand for evaporative cooling, swimming pools, and landscaping were developed from the Phoenix AMA evaporative cooler study, a telephone survey of swimming pool and spa contractors on average pool water use and installation rates, and landscaping consumptive use values obtained from average evapotranspiration (ETo) rates and rainfall for the Phoenix AMA and the University of Arizona Pima County Cooperative Extension Service. Although it is recognized that not all homeowners conform to model use rates, it was assumed that new homes have the potential to implement appropriate landscaping practices and that providers have a stronger ability to influence new homeowners'

decisions than homeowners in established neighborhoods. The exterior water use model for new single family residential development is 178 GPHUD. The exterior water use model for new multifamily residential development will remain constant from the Second Management Plan at 77 GPHUD. Table 5-4 summarizes the assumptions used to develop the single family exterior water use model for the Third Management Plan. Details on the assumptions used in developing the exterior water use model are contained in Appendices 5-G.1, 5-G.2, and 5-G.3.

TABLE 5-4
THIRD MANAGEMENT PLAN
EXTERIOR WATER USE MODEL - NEW SINGLE FAMILY DEVELOPMENT
PHOENIX ACTIVE MANAGEMENT AREA

Exterior Use	Model Use Rate
Evaporative Cooling	5 GPHUD
Swimming Pool	29 GPHUD
Landscape Watering	144 GPHUD
TOTAL	**178 GPHUD**

5.7.1.1.1.3 Analysis of Non-Residential Water Use

In the Second Management Plan, the proportion of non-residential water use to residential water use was held constant from base year levels for each provider. Additionally, the Department assumed that non-residential water use in the Phoenix AMA could become more efficient through the management period and assumed a 4 percent reduction to be achieved by 1995 and an additional 3 percent reduction to be achieved by the year 2000. It was assumed, in order to achieve these reductions, that providers would have the ability to utilize effluent for new non-residential uses such as turf-related facilities and landscaping within industrial and commercial facilities, and that the influence of compliance with the turf-related facility requirements would result in more efficient new non-residential users. Specifically, the direct use of effluent to serve these needs would have no impact on a provider's ability to comply with its total GPCD requirement because the direct use of effluent is not counted when determining compliance with the gallon per capita per day requirements.

A significant potential for effluent reuse still exists within the municipal sector for existing non-potable uses. The exclusion of effluent, either delivered directly or stored underground and recovered from within the area of impact, from the total GPCD requirement will continue through the third management period. Also, providers have the option of applying for the ACP or the NPCCP, neither of which imposes per capita requirements on the non-residential sector. Because providers with disproportionate increases in non-residential water use have the option to enter one of the alternative programs, each provider's non-residential GPCD component in the Third Management Plan will remain the same as the non-residential GPCD assumed for the provider in the final GPCD requirement for the Second Management Plan (see Appendix 5-H).

5.7.1.1.1.4 Lost and Unaccounted for Water

In the Third Management Plan, large municipal providers must limit the amount of lost and unaccounted for water in their distribution systems during a year to no more than 10 percent of the total water withdrawn, diverted, or received in the year. (See section 5.7.6.2, Distribution System Requirements.) In the Second Management Plan, requirements were set assuming lost and unaccounted for water use rates held constant from the base year throughout the management period up to the limit of 10 percent. By

doing so, providers with less than 10 percent lost and unaccounted for water in the base year were held to a figure below the standard throughout the second management period. For the third management period, providers will be allowed to include their actual lost and unaccounted for water, up to the 10 percent limit, each year when calculating the annual total GPCD requirement and will not be held to the lower historic rates.

5.7.1.1.2 Total Gallons Per Capita Per Day Compliance

5.7.1.1.2.1 Compliance Calculation

Compliance with the Total GPCD Program will be determined annually by comparing the large municipal provider's total annual use (in gallons) of all water (except spill water, CAP exclusion water, direct use effluent, and effluent recovered within the area of impact) withdrawn, received, and diverted for non-irrigation use to the amount of water the provider could legally withdraw, divert, and receive during the year for non-irrigation use. The amount of water that a provider can legally withdraw, divert, or receive during a year for non-irrigation use is calculated by multiplying the provider's total GPCD requirement for the year, as calculated using the component methodology, by the provider's service area population as of July 1 of the year, and then multiplying the product by the number of days in the year. The difference between the provider's actual use volume and the component volumes will thus be used to determine compliance. Any credits or debits in the provider's flexibility account will be taken into account when determining compliance as discussed below.

5.7.1.1.2.2 Flexibility Account

To account for variations in weather, the Department established a flexibility account in the Second Management Plan to determine compliance with the total GPCD requirements. This same approach will be used for determining compliance with the total GPCD requirement during the third management period. Under this approach, if the provider uses less water in a year than is allowed by its total GPCD requirement, a credit is registered to the provider's account in the amount of the difference. Alternatively, if a provider uses more water during a year than is allowed by its total GPCD requirement, a debit is registered to the provider's flexibility account in the amount of the difference. The flexibility account allows providers to accumulate 60 GPCD of credit or up to 20 GPCD of debit. A provider is out of compliance with its total GPCD requirement for the year if a debit causes the flexibility account to exceed the maximum negative account balance of 20 GPCD.

5.7.1.1.2.3 Annual Population Estimates

In order to determine annual service area populations, the Department will request, on an annual basis, an updated service area boundary from each large municipal provider delineating the areas within the service area that contain distribution lines, treatment facilities, and wells. These boundaries are updated and compared to the census tracts or enumeration districts determined by the United States Census Bureau. Annual service area population is based on the latest Census, which is broken down or disaggregated by unit type (single family homes, apartments, town homes, mobile homes, and other) to determine the base housing unit counts for each service area. Each year, county and municipal entities report the number of housing completions and deletions that occur within the city or town limits to the Maricopa Association of Governments. The reported new units are added to the number of existing total housing units within the service area boundary pursuant to the latest Census to derive the new total housing unit figure for the service area each year. Occupancy rates and persons per occupied housing unit rates are then calculated and used to determine the estimated service area population for each provider.

For providers outside Maricopa County, population estimates will also be based on the latest Census data. However, annual housing unit additions will be taken from the annual water use report and verified through the Pinal County Planning Department and other local entities.

5.7.1.2 Non-Per Capita Conservation Program

The NPCCP was added to the Second Management Plan in 1995 after being developed in cooperation with representatives of the water using community. This program requires a provider to implement specific conservation measures within its service area instead of requiring compliance with per-capita conservation requirements. A provider in this program must implement reasonable conservation measures, or RCMs, for interior and exterior residential water uses and interior and exterior non-residential uses, as well as an education program. The RCMs must be designed to result in water use efficiency within the provider's service area equivalent to the water use efficiency assumed in the provider's total GPCD requirement.

The Department has established a list of standard RCMs that are designed to achieve an efficiency equivalent to the assumptions used in the Total GPCD Program. However, if the standard RCMs do not fit the service area characteristics of a provider, the program allows the provider the flexibility to substitute measures that are designed to achieve the same savings yet fit the unique characteristics of the provider's service area. For the third management period, the Department will establish a steering committee to assist the Department in reviewing the existing RCMs outlined below, the substitute RCMs contained in Appendix 5-I.4, and development of monitoring and reporting requirements that would benefit the administration of the alternative programs. This steering committee will be made up primarily of Department staff and large municipal providers that are regulated under an alternative program. Other persons who the director considers to be beneficial may also be included.

5.7.1.2.1 Groundwater Use Reduction Requirement

The provider must meet one of the following requirements to be eligible to participate in the NPCCP: (1) the provider must be a member of a groundwater replenishment district, (2) the provider must be designated as having a 100-year assured water supply under the Department's AWS Rules, or (3) the provider must implement a plan to reduce mined groundwater withdrawals to zero by the year 2010 using a straight-line volumetric reduction.

5.7.1.2.2 Reasonable Conservation Measures

A set of standard Residential, Non-Residential, and Education RCMs were developed by the Department with the aid of an advisory group made up of conservation program experts from the regulated community. Each RCM prescribes actions that must be taken by the provider to achieve water use efficiencies in each sector. Providers who have already implemented these measures will be required to implement additional conservation measures, consistent with the conservation potential for their service area, to qualify for the program. An outline of the standard RCMs are listed below. For a more detailed description of each RCM, please refer to Appendices 5-I.1, 5-I.2, and 5-I.3. Additional substitute RCMs (Appendix 5-I.4) were developed to allow a provider to develop a conservation program that meets the characteristics of its service area. In order for a provider to use a substitute RCM in place of a Standard RCM, the provider must apply to the director and demonstrate that the substitute RCM will be designed to achieve a water use efficiency equivalent to the Standard RCM. The Standard RCMs are outlined below.

Standard RCMs

A. Residential Interior

1. Water Audit And Fixture Retrofit Program for Existing Residential Customers

2. Ordinance Or Condition of New Service Prohibiting Installation Or Replacement of Plumbing Fixtures in Residential Housing Units Unless Fixtures Meet Water Savings Standards

B. Residential Exterior

1. Audit Program for Existing Residential Customers
2. Landscape Watering Advice Program for Existing And New Residential Customers
3. Ordinance Or Condition of New Service for Model Homes in New Residential Developments
4. Prohibit the Creation of Covenants, Conditions, And Restrictions Which Require the Use of Water-Intensive Landscaping Or Which Prohibit the Use of Low Water Use Landscaping in New Residential Developments
5. *One additional landscape RCM from the three below* ***(Choice of one of the following)***
   a) Ordinance Or Condition of New Service Limiting Use of Turf And Other Water-Intensive Landscaping in New Multifamily Developments; **or**
   b) Ordinance Or Condition of New Service Limiting Use of Turf And Other Water-Intensive Landscaping in Common Areas of New Single Family And Multifamily Developments; **or**
   c) Rebate Program for New Residential Customers

C. Non-Residential Interior

1. Interior Audit Program for Existing Facilities
2. Ordinance Or Condition of New Service Prohibiting Installation Or Replacement of Plumbing Fixtures in Non-Residential Facilities Unless Fixtures Meet Water Saving Standards
3. Distribution of Conservation Information to All New Non-Residential Customers And Submittal of Water Use Plan by New Large Facilities

D. Non-Residential Exterior

1. Exterior Audit Program for Existing Non-Residential Customers
2. Landscape Ordinance Or Condition of New Service for New Facilities

E. Education

1. Public Information And Education Program

5.7.1.2.3 Compliance with the Non-Per Capita Conservation Program

A large municipal provider regulated under the NPCCP is in compliance with the program if it implements the agreed-to RCMs and limits its use of groundwater to the amount allowed under the AWS Rules or the amount allowed under the straight-line reduction, whichever is applicable. The Department will use the written agreement for the NPCCP to monitor progress with the program. Each year, along with the Annual Water Withdrawal and Use Report, the municipal provider will be required to submit a progress report describing the implementation of each RCM, the cost of implementing the program, estimated or actual water savings, and a description of any difficulties with the program. Providers regulated under the NPCCP will also be required to comply with individual user, distribution system, and monitoring and reporting requirements contained in this chapter.

5.7.1.3 Alternative Conservation Program

The ACP was developed for the Second Management Plan to give large municipal providers with disproportionately increasing non-residential water use an alternative to the Total GPCD Program. The ACP allows providers with disproportionately increasing non-residential water use the flexibility to serve

those non-residential uses while achieving water use efficiency levels comparable to those set by the Total GPCD Program. The ACP consists of the following requirements that must be met by the provider: (1) a groundwater use limitation, (2) a residential GPCD requirement, and (3) non-residential RCMs.

5.7.1.3.1 Groundwater Use Limitation Requirement

A provider regulated under the ACP must limit its annual groundwater use as follows: (1) If the provider is designated as having an assured water supply, it must limit its annual groundwater use to the amount it can use consistent with the AWS Rules; or (2) If the provider is not designated as having an assured water supply, it must limit its annual groundwater use to its largest legal groundwater use during any one year from 1980 through 1989 if it was serving water on or before January 1, 1990, or to 50 percent of the largest legal groundwater use during any one year from January 1, 1990 through 1999 if it began serving water after January 1, 1990 but before January 1, 2000. A provider can achieve compliance with the groundwater use limitation requirement by permanently extinguishing grandfathered rights within the AMA, or by serving groundwater that will be replenished by a replenishment district, remediated groundwater that is accounted for as surface water under section 5-115 of the municipal conservation requirements, groundwater withdrawn outside of an AMA, or renewable supplies.

5.7.1.3.2 Residential Gallons Per Capita Per Day Requirement

Each provider regulated under the ACP is required to comply with a residential GPCD requirement that is calculated using separate GPCD and GPHUD rates for existing residential, new single family, and new multifamily water users. These rates are derived using the same methodology as that used to calculate the residential portion of the total GPCD requirement. The residential GPCD requirement is recalculated annually based on growth within the service area using the same calculation used for the residential components of the Total GPCD Program (see Appendix 5-K).

5.7.1.3.3 Non-Residential Reasonable Conservation Measures

Providers regulated under the ACP must implement specific conservation measures for non-residential water users. Providers who have already implemented these measures will be required to implement additional conservation measures to qualify for the program. The non-residential requirements for the Third Management Plan have been modified from the Second Management Plan to be identical to the non-residential requirements for the NPCCP. These requirements are as follows:

Standard Non-Residential RCMs

A. Non-Residential Interior

1. Interior Audit Program for Existing Facilities
2. Ordinance Or Condition of New Service Prohibiting Installation Or Replacement of Plumbing Fixtures in Non-Residential Facilities Unless Fixtures Meet Water Saving Standards
3. Distribution of Conservation Information to All New Non-Residential Customers And Submittal of Water Use Plan by New Large Facilities

B. Non-Residential Exterior

1. Exterior Audit Program for Existing Non-Residential Customers
2. Landscape Ordinance Or Condition of New Service for New Facilities

Providers also have the added flexibility of requesting a substitute RCM for the non-residential requirements, which must be approved by the director.

5.7.1.3.4 Compliance with the Alternative Conservation Program

A provider regulated under the ACP is in compliance with the program if it does not exceed its residential GPCD requirement, implements the agreed to non-residential RCMs, and limits its use of groundwater to the amount allowed under the AWS Rules or the amount allowed under the historic use limitation, whichever is applicable. The Department will use the written agreement for the ACP to monitor progress with the program. Each year, along with the Annual Water Withdrawal and Use Report, the municipal provider will be required to submit a progress report describing the implementation of each non-residential RCM, the cost of implementing the program, estimated or actual water savings, and a description of any difficulties with the program. Providers regulated under the ACP will also be required to comply with individual user, distribution system, and monitoring and reporting requirements.

5.7.1.3.4.1 Groundwater Use Limitation

A provider regulated under the ACP is in compliance with the groundwater use limitation requirement of the ACP if no more groundwater is used in the calendar year than is allowed pursuant to the provisions of the program.

5.7.1.3.4.2 Residential Gallons Per Capita Per Day Requirement

Compliance with the residential GPCD requirement will be determined in a manner similar to the manner in which compliance with the total GPCD requirement is determined. A flexibility account will be established for the provider at the time the provider enters the ACP. The maximum positive balance allowed in the account at any time is 45 GPCD, and the maximum negative balance allowed in the account at any time is 15 GPCD.

Following each year in which the provider is regulated under the ACP, the total amount of water allocated to the provider for residential use during the year will be calculated by multiplying the provider's residential GPCD requirement for the year by the provider's service area population for the year, and then multiplying that product by the number of days in the year. That amount will then be compared to the total amount of water from any source, except spillwater and direct use effluent and effluent recovered within the area of impact, delivered by the provider for residential use during the year. If the allocated amount is greater than the amount delivered for residential use during the year, the difference is credited to provider's flexibility account, subject to the maximum positive account balance. If the allocated amount is less than the amount delivered for residential use during the year, the difference is debited to the provider's flexibility account. The provider is out of compliance with its residential GPCD requirement for the year if the debit causes the flexibility account to exceed the maximum negative account balance of 15 GPCD.

5.7.1.3.4.3 Non-Residential Reasonable Conservation Measures

A provider regulated under the ACP is in compliance with the standard non-residential RCMs, or any substitute non-residential RCMs approved by the director, if it implements the agreed-to non-residential RCMs.

5.7.1.4 Institutional Provider Program

The IPP in the Second Management Plan replaced the First Management Plan special provider category and will be continued in the Third Management Plan. The IPP allows those providers with primarily non-residential uses and who are unable to economically utilize non-groundwater sources to be regulated under a program that focuses on the specific institutional water use characteristics of their service area. The IPP is designed for large municipal providers who supply more than 90 percent of their total water deliveries to non-residential water users. Specifically, these non-residential uses may include prisons, hospitals, military

installations, airports, and schools. A large municipal provider may request entrance into this program by submitting an application in writing to the director at any time during the management period. If the request is approved, the provider will be assigned a maximum residential GPCD requirement and specific conservation measures for non-residential uses, and will also be required to comply with individual user, distribution system, and monitoring and reporting requirements. The Department will grant institutional provider designation only if the Total GPCD Program is not appropriate and the provider demonstrates that it cannot qualify for the ACP or NPCCP by limiting its groundwater use, retiring grandfathered groundwater rights, or using alternative sources of water.

5.7.2 Conservation Requirements for Large Untreated Water Providers

A large untreated water provider must limit its deliveries of untreated water during a year to an amount calculated by multiplying the number of gross acres of land to which it serves untreated water by an average annual application rate of 4 acre-feet per acre. A gross acre is the entire area, including associated structures, but not including any acres regulated as a turf-related facility. A large untreated water provider must also meet the individual user requirements, distribution system requirements, and the monitoring and reporting requirements.

5.7.3 Conservation Requirements for New Large Municipal Providers

A new large municipal provider is defined as a city, town, private water company, or irrigation district that begins serving more than 250 acre-feet of non-irrigation water per year after January 1, 2000. All new large municipal providers will initially be assigned to the Total GPCD Program. Their total GPCD requirement will be calculated consistent with the component methodology used for existing large municipal providers.

The Department will determine the base year for the new large municipal provider as the year, or years, preceding the year in which the provider began serving more than 250 acre-feet per year, unless the director determines that water usage during that period is not representative of historic water use. The Department will then collect residential and non-residential water use data for the base year and the total gallons of water withdrawn, diverted, or received by the provider in the service area. Using an analysis of conservation potential for existing residential users, the Department will calculate a GPCD requirement for existing residential users. New residential development will be assigned the interior residential model use rates of 57 GPCD for new single family and multifamily water users, the exterior water use model of 178 GPHUD for new single family, and 77 GPHUD for new multifamily exterior water use. The actual annual amount of non-residential water use will be included in the GPCD requirement, up to 18 GPCD. The annual amount of lost and unaccounted for water will also be included, up to 10 percent of the total water use in each year.

A new large provider may apply for an administrative review requesting a temporary adjustment to its total GPCD requirement in order to serve a turf-related facility. A temporary adjustment will be allowed if the provider demonstrates that direct use effluent or effluent recovered within the area of impact is committed to serve the turf-related facility beginning in four years, but a longer period is necessary for sufficient effluent to be produced to serve the entire facility. The adjustment will remain in effect only until sufficient direct use effluent or effluent recovered within the area of impact is available to serve the entire facility, not to exceed eight years, and may be adjusted as the volume of effluent use increases. The adjustment will be terminated if the infrastructure necessary to deliver the effluent is not in place at the beginning of the fourth year after the provider commences service to the facility. A permanent adjustment will not be granted to a new large municipal provider. If a new large municipal provider cannot serve a turf-related facility under its existing per capita requirement and direct use effluent or effluent recovered within the area of impact will not be physically available to serve the facility within a reasonable period of

time, the provider may enroll in the Non-Per Capita Conservation Program or the Alternative Conservation Program, if it wishes to serve the facility.

Each new large municipal provider will be notified of its total GPCD requirement and will be given two full years to comply with the requirement. A new large municipal provider may apply for the NPCCP or the ACP in accordance with the provisions of these programs and is subject to the individual user, distribution system, and monitoring and reporting requirements contained in this chapter.

5.7.4 Conservation Requirements for Consolidated Municipal Providers and Providers that Acquire or Convey a Portion of a Service Area

If two or more municipal providers consolidate their service areas or if a large municipal provider acquires a portion of another provider's service area, the consolidated provider, acquiring provider, or conveying provider will receive a recalculated or revised conservation requirement. A consolidated provider that qualifies as a large municipal provider will be assigned to the Total GPCD Program and its GPCD components will be calculated by prorating the respective per capita component targets, populations, and water use as appropriate. A consolidated provider may apply for the NPCCP or the ACP. If one of the consolidated providers was regulated under one of these programs prior to the consolidation, the consolidated provider's application for the program must include only the information that has changed since the provider originally filed the application for the program. Providers that acquire or convey a portion of a service area continue to be regulated under the conservation program they were under prior to the acquisition or conveyance. However, if they were regulated under either the NPCCP or the ACP, they must reapply for regulation under that program within 180 days after the acquisition or conveyance and must submit only the information that has changed since the original application was filed.

5.7.5 Conservation Requirements for Small Municipal Providers

During the third management period, small municipal providers will be required to minimize waste of all water supplies, maximize efficiency in outdoor watering, encourage reuse of water supplies, and reduce total gallons per capita per day usage.

5.7.6 Regulatory Requirements for All Municipal Providers

The following requirements have been established for all municipal providers: individual user requirements, distribution system requirements, and monitoring and reporting requirements. Each is described in this section.

5.7.6.1 Individual User Requirements

An individual user is a person who receives water from a municipal provider. For the Third Management Plan, the director is required to establish "such other conservation measures as may be appropriate for individual users." A.R.S. § 45-566 (A)(2). In the Second Management Plan, individual user requirements were established for turf-related facilities, publicly owned rights-of-way, and large cooling towers. These requirements have been retained for the Third Management Plan with some modifications.

Turf-related facilities are subject to an allotment-based conservation requirement. Landscaping planted after December 31, 1986 in publicly owned rights-of-way and watered with groundwater may be planted only with plants from the Low Water Use/Drought Tolerant Plant List (Appendix 5-L). The cooling tower requirements have been modified from the Second Management Plan requirements, which applied only to towers built after January 1, 1990 with a total capacity exceeding 250 tons. The Third Management Plan regulates both new and existing large-scale cooling facilities with a total capacity of 1000 tons or more.

In addition to these individual user requirements, the Third Management Plan contains an individual user requirement that was not included in the Second Management Plan. This additional requirement prohibits the use of groundwater to maintain a water feature installed in a publicly owned right-of-way after January 1, 2002.

Either the individual user or the municipal provider serving the individual user is responsible for complying with the individual user requirement. See section 5-112 for determining responsibility for compliance with the individual user requirements.

5.7.6.2 Distribution System Requirements

Lost and unaccounted for water is defined as the total water from any source, except direct use effluent, withdrawn, diverted, or received in a year minus the total amount of authorized deliveries made by the municipal provider in that year. Lost and unaccounted for water includes line leakage, meter under-registration, evaporation or leakage from storage ponds or tanks, system and hydrant leaks or breaks, and illegal connections.

All municipal providers are required to meet an efficient lost and unaccounted for water standard in their service areas. Lost and unaccounted for water will be determined for each municipal provider based on the total quantity of metered and unmetered water deliveries and the total water pumped, received, or diverted by the municipal provider for each calendar year, excluding direct use effluent. Small municipal providers must maintain lost and unaccounted for water at or below 15 percent. Large municipal providers are required to maintain their system not to exceed 10 percent lost and unaccounted for water. Large untreated water providers are required to either line all canals used to deliver untreated water to the provider's delivery points with a material that allows no more lost water than a well-maintained concrete lining, or operate and maintain its distribution system to limit lost and unaccounted for water at or below 10 percent.

For the third management period, the Department will allow providers to exclude water from the lost and unaccounted for water calculation that is either metered or estimated using approved estimating procedures and that is used pursuant to other regulatory requirements such as well purging and line flushing. Providers may also exclude estimated water uses such as construction (truck loads for dust control) or fire services, but all other uses of water within a distribution system must be metered. Appendix 5-M provides a complete list of uses that are considered in the lost and unaccounted for water calculation and those uses that can be estimated to determine the volume.

5.7.6.3 Monitoring and Reporting Requirements

All municipal providers are required to annually: (1) report to the Department information on the total quantity of water used within the service area and the total volume of water delivered for various municipal purposes, (2) calculate the volume of lost and unaccounted for water within the service area, and (3) report the total number of housing units, by unit type, added to the water service area from July 1 of the previous calendar year to July 1 of the reporting year.

Large municipal providers are required to separately measure and report the amount of water delivered each month for: irrigation uses; residential uses, separated by single family and multifamily; and non-residential uses, separated by water use categories, including turf-related facility use, commercial use, industrial use, government use, construction use, surface water treatment, and other uses.

All municipal providers are required to submit to the Department, on an annual basis, an updated service area and distribution system map delineating all potable and non-potable distribution lines greater than four inches, all potable treatment facilities, all well sites, and all non-potable treatment.

Large municipal providers regulated under the NPCCP or the ACP are required to submit a progress report that includes an evaluation of the reasonable conservation measures in accordance with their written stipulated agreement.

5.8 INCENTIVES FOR THE USE OF RENEWABLE SUPPLIES AND REMEDIATED GROUNDWATER

Incentives have been developed to increase the use of non-groundwater supplies. For instance, effluent (directly used or stored underground and recovered from within the area of impact) and spill water are not counted in the annual per capita use rate for municipal providers regulated under the Total GPCD Program or the ACP.

Providers who have committed to serve effluent, but have not yet fully developed the resource, can enter into an agreement with the Department to exclude from their total GPCD usage rate CAP deliveries to non-residential facilities that have committed to use effluent when it becomes available. In order to qualify for this exclusion, the facility must commit to fully utilize the effluent within a 10-year period.

In 1997, the Legislature enacted legislation significantly revising the Water Quality Assurance Revolving Fund (WQARF) program to provide incentives for the use of remediated groundwater to facilitate the treatment of contaminated groundwater. Among other things, the WQARF legislation provides that when determining compliance with management plan conservation requirements, the Department shall account for groundwater withdrawn pursuant to approved remedial action projects under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or Title 49, Arizona Revised Statutes, consistent with the accounting for surface water. Laws 1997, Ch. 287, § 51(B). See Chapter 7, section 7.4.4.6.3. Groundwater withdrawn pursuant to an approved remedial action project retains its legal character as groundwater for all other purposes under Title 45, Arizona Revised Statutes, including all other laws regulating groundwater withdrawal and use such as the assessment of withdrawal fees pursuant to A.R.S. § 45-611, *et seq.*, as well as laws regulating water exchanges as set forth in A.R.S. § 45-1001, *et seq.*, the transportation of groundwater as set forth in A.R.S. § 45-541, *et seq.*, withdrawals of groundwater for transportation to active management areas as set forth in A.R.S. § 45-551, *et seq.*, and underground water storage, savings, and replenishment as set forth in Title 45, Chapter 3.1, Arizona Revised Statutes.

For each approved remedial action project, the annual amount of groundwater that is eligible for the remediated groundwater accounting incentive is the maximum annual volume of groundwater that may be withdrawn pursuant to the project, as specified in the consent decree or other document approved by the EPA or ADEQ. However, if the project was approved prior to June 15, 1999 and the maximum annual volume of groundwater that may be withdrawn pursuant to the project is not specified in a consent decree or other document approved by the EPA or ADEQ, the annual amount of groundwater that is eligible for the remediated groundwater accounting incentive is the highest annual use of groundwater withdrawn pursuant to the project prior to January 1, 1999. The director may modify the annual amount of groundwater that is eligible for the accounting incentive if an increase in withdrawals is necessary to further the purpose of the project or if a change is made to the consent decree or other document approved by the EPA or ADEQ.

In order to qualify for the remediated groundwater accounting incentive, a person must notify the director in writing of the anticipated withdrawal of the groundwater prior to its withdrawal. The notification must include a copy of a document approved by ADEQ or the EPA such as the Remedial Action Plan (RAP), Record of Decision (ROD) or consent decree. Unless specified in the document, the notification must include the volume of groundwater that will be pumped annually pursuant to the project, the time period to which the document applies, and the annual authorized volume of groundwater that may be withdrawn pursuant to the project. The notification must also include the purpose for which the remediated groundwater will be used and the name and telephone number of a contact person. Additionally, at the

time the notice is given, the person must be using remediated groundwater pursuant to the approved remedial action or must have agreed to do so through a consent decree or other document approved by ADEQ or the EPA. Remediated groundwater that qualifies for the accounting must be metered and reported separately from groundwater that does not qualify for the accounting. (See section 5-115 of the Municipal Conservation Requirements).

5.9 NON-REGULATORY EFFORTS

In 1991, the Department initiated a grants program for conservation assistance in the AMAs. Individual AMA programs focus on the areas of highest water conservation potential in each water use sector (municipal, industrial, and agricultural) based on total water usage, current water usage practices, and potential for implementation of new conservation technologies. Funding for the grants program comes from an annual withdrawal fee levied and collected from all persons withdrawing groundwater in the AMAs. Since the grant program began, the Phoenix AMA has funded 33 municipally related conservation assistance grants for a total of $995,173.

For the Third Management Plan, funding efforts for the municipal sector may be focused on developing methodologies to more accurately analyze water savings associated with various conservation measures and determining the water use patterns of end users. Studies have been developed and are currently being conducted in these areas. Future funds may be used to further analyze these studies and evaluate the need for additional examination and analysis.

For the development of the Third Management Plan, the Phoenix AMA formed the Municipal Technical Advisory Committee to aid in evaluating the Second Management Plan requirements and to assist in the development of regulations for the third management period. During the third management period, the Phoenix AMA will continue to utilize this group, made up of representatives from the regulated and non-regulated community, on an ongoing basis. Actions may include evaluation of the Third Management Plan municipal programs, especially the NPCCP requirements, and to serve as a clearinghouse for new conservation technologies and data acquisition. This committee may consist of city, town, and private water company representatives, as well as other water management professionals who have the expertise to assist the AMA in implementing municipal conservation programs.

5.10 SUMMARY AND CONCLUSIONS

The Third Management Plan Municipal Program includes conservation requirements for large municipal providers, large untreated water providers, and small municipal providers. Large municipal providers are noticed of conservation requirement components for existing residential water use, new residential water use, non-residential water use, and lost and unaccounted for water use for the third management period. The components are used to calculate a total GPCD requirement for each calendar year based on growth within the large municipal provider's water service area. Large municipal providers may also apply for the ACP or the NPCCP. Both of these alternative programs require a limitation or reduction in the provider's use of groundwater in order to qualify. Large untreated providers will continue to be regulated under an acre-foot per gross acre basis. Small municipal providers are only required to reduce waste and improve water use efficiency within their water service areas during the third management period.

All municipal providers must comply with individual user, monitoring and reporting, and distribution system requirements. Information on water use, growth, and system losses, for example, must be reported to the Department on an annual basis.

5.11 FUTURE DIRECTIONS

The municipal sector in the Phoenix AMA, as a whole, has been on the forefront of reducing reliance on groundwater supplies since the Code went into effect in 1980. Achieving the Phoenix AMA goal of safe-yield will ensure that adequate water supplies exist for future water users. The utilization of renewable supplies in lieu of groundwater mining, combined with the implementation of effective conservation measures, is the management approach that will continue to be used by the Department to reach the safe-yield goal by 2025 or earlier. The Department recognizes the significant contribution the municipal sector has made to the achievement of the management goal for the Phoenix AMA. However, it is also recognized that, due to the significant growth potential in this sector through 2025 and beyond, this sector will ultimately be responsible for the majority of the demand and the ultimate benefactors of the conservation of groundwater supplies in the future. Thus, in order to ensure that adequate water supplies are available for this sector in the future, the Department will continue to rely heavily on this sector to achieve safe-yield. Through a combination of the AWS Rules and the Municipal Conservation Program, the municipal sector will be required to use all supplies efficiently through the programs developed in this and subsequent management plans to support the anticipated growth in this area.

The remaining issues that need to be addressed in the municipal sector during the third management period include providing a mechanism for private water companies and smaller municipalities to share the responsibility of developing the distribution and treatment facilities necessary to directly utilize renewable supplies. The Department will look at ways to encourage regional solutions and will provide technical assistance to accelerate the direct use of renewable supplies in these areas. Additionally, designing a conservation program approach for private water companies that meets with the standards exercised by the ACC yet also addresses the legislative requirement of the Department to achieve safe-yield is another very important issue that needs to be resolved in the third management period. Through discussions with the ACC, the Department will work closely to be involved in the development of ACC policies related to water conservation and supply acquisition. The Department will also work to develop an understanding with the ACC on the ability of private water companies to implement alternative programs and be given more assurance for the pass-through of costs associated with the required programs established by the Department.

Increasing the utilization of renewable supplies across the municipal sector, for both municipalities and private water companies, has been partially addressed through the implementation of the AWS Rules, resulting in a limitation of the amount of groundwater available for future growth. However, certain existing water users within the municipal sector have no requirements for the utilization of non-groundwater supplies. Comments have been made that the Department needs to develop additional incentives to encourage these users to accept and finance the more expensive renewable supplies. An analysis of the availability of renewable supplies for current and projected populations needs to be made to assess the likelihood of developing renewable supplies outside of the assured water supply requirements. Continued evaluations through groundwater modeling of the impact of continued pumping outside of areas that have been designated as having an assured water supply must also be conducted. A reevaluation of the "grandfathering in" and the responsibility of existing water users to remedy the continued overdraft has been identified as an area that needs new attention. The short-term and long-term impacts of additional incentives for renewable supplies should also be evaluated, especially with the tremendous growth potential and the need to identify efficient uses.

Addressing the relationship of the Assured Water Supply Program (AWS Program) and the management plan provisions is another area that the Department needs to accomplish. The inability to require new subdivisions outside the boundaries of a designated water service area to implement water conserving approaches and comply with the consistency with management plan criteria in the design and building of the subdivision needs to be addressed. Further, it is necessary to identify the role of conservation as a

water supply in the AWS Program to strengthen the Department's assertion of efficient use of all water supplies to ensure a viable water supply into the future.

The Department and the regulated community have both realized that information regarding the water savings and cost/benefit of existing conservation programs and practices is not as readily available or even easily identifiable to produce a comprehensive evaluation of the successes or deficiencies in water conservation in the Phoenix AMA. In cooperation with the regulated community, the Department will work throughout the third management period to improve data collection and analyses of conservation measures and practices. The Department will continue to collect information on the best available technologies for residential and non-residential water use. Based on this information, the Department will evaluate its current Municipal Conservation Program approach to determine if alternatives can or should be developed to effectively evaluate the impacts of the municipal program. Additionally, it is the intent of the Department to continue to quantify reasonable goals for future reductions in municipal water use.

Finally, the Department will focus on developing water management strategies to address localized water conditions affecting the ability of municipal water providers to develop and maintain adequate water supplies in the Phoenix AMA. The development of critical area management will be a major focus of the Department during the third management period. The strategy for critical area management could include promoting water withdrawals from areas that are benefiting from natural and artificial recharge rather than from areas experiencing severe water level declines. Additional management strategies could include the development of incentives for recharge and direct use of renewable water supplies in these areas or disincentives for excessive withdrawals.

5.12 MUNICIPAL CONSERVATION REQUIREMENTS AND MONITORING AND REPORTING REQUIREMENTS

5-101. Definitions

In addition to the definitions set forth in Chapters 1 and 2 of Title 45 of the Arizona Revised Statutes, unless the context otherwise requires, the following words and phrases used in this chapter shall have the following meanings:

1. *"Canal" means a waterway constructed for the purpose of transporting water to a point of delivery, including main canals and lateral canals.*

2. *"CAP water" means central Arizona project water.*

3. *"Common area" means a recreational or open space area or areas owned and operated as a single integrated facility and maintained for the benefit of the residents of a housing development.*

4. *"Construction use" means a use of water for construction purposes, including the use of water for dust control, compaction and preparation of building materials on construction sites.*

5. *"Direct use effluent" means effluent that is transported directly from a facility regulated pursuant to Title 49, Chapter 2, Arizona Revised Statutes, to an end user. Direct use effluent does not include effluent that has been stored pursuant to Title 45, Chapter 3.1, Arizona Revised Statutes.*

6. *"Effluent recovered within the area of impact" means effluent that has been stored pursuant to Title 45, Chapter 3.1, Arizona Revised Statutes, and recovered within the stored effluent's area of impact prior to use. For the purpose of this definition, "area of impact" has the same meaning as prescribed by A.R.S. § 45-802.01.*

7. *"Excluded CAP water" means CAP water that is excluded from a municipal provider's total GPCD requirement pursuant to section 5-103, subsection E.*

8. *"Existing individual user" means an individual user that was receiving water from a municipal provider as of the date the Third Management Plan was adopted.*

9. *"Existing large municipal provider" means a large municipal provider that was in operation and was serving water on or before January 1, 2000.*

10. *"Existing non-residential customer" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105, a non-residential customer to whom the provider served water on the date the provider was accepted for regulation under the program.*

11. *"Existing residential customer" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104, residential customer to whom the provider served water on the date the provider was accepted for regulation under the program.*

12. *"Existing residential housing units" means housing units that first began using water prior to July 1, 2000.*

13. *"Existing residential population" means the portion of the service area population of a municipal provider that resides in existing residential housing units.*

14. *"Exterior water use" means non-residential or residential uses of water for landscaping, pools, evaporative cooling systems, decorative fountains and other outdoor uses of water.*

15. *"Extinguish" means, for the Alternative Conservation Program's groundwater use limitation requirement, to cause a grandfathered groundwater right to cease to exist through a formal process established by the director.*

16. *"GPCD" means gallons of water per capita per day.*

17. *"GPHUD" means gallons of water per housing unit per day.*

18. *"Housing unit" means a group of rooms or a single room occupied as separate living quarters. Housing unit includes a single family home, a patio home, a townhouse, a condominium, an apartment, a permanently set-up mobile home or a unit in a multifamily complex. Housing unit does not include a mobile home in an overnight or limited-stay mobile home park or a unit in a campground, motel, hotel or other temporary lodging facility. A housing unit may be occupied by a family, a family and unrelated persons living together, two or more unrelated persons living together, or by one person.*

19. *"Incidental recharge" and "incidental recharge factor" have the definitions prescribed by A.R.S. § 45-561.*

20. *"Individual user" means a person receiving water from a municipal provider for non-irrigation uses to which specific conservation requirements apply, including turf-related facilities, large-scale cooling facilities, and publicly-owned rights-of-way.*

21. *"Interior water use" means non-residential or residential indoor uses of water, including toilet flushing, bathing, drinking, and washing.*

22. *"Landscapable area" means the entire area of a lot less any areas covered by structures, parking lots, roads and any other area not physically capable of being landscaped.*

23. *"Large municipal provider" means a municipal provider serving more than 250 acre-feet of water for non-irrigation use during a calendar year, not including untreated water served by a municipal provider that qualifies as a large untreated water provider.*

24. *"Large-scale cooling facility" means a facility that has control over cooling operations with a total combined cooling capacity greater than or equal to 1,000 tons. For the purposes of this definition, the minimum cooling tower size that shall be used to determine total facility cooling capacity is 250 tons. A large-scale cooling facility does not include a large-scale power plant that utilizes cooling towers to dissipate heat.*

25. *"Large untreated water provider" means a municipal provider that as of January 1, 1990 was serving untreated water to at least 500 persons or supplying at least 100 acre-feet of untreated water during the calendar year. In addition, a municipal provider that entered into a written agreement between December 15, 1989 and September 21, 1991 to serve*

untreated water to a user, and that provided a copy of that agreement to the director by June 22, 1992, is a large untreated water provider upon serving untreated water to at least 500 persons pursuant to the service agreement or upon supplying 100 acre-feet of untreated water during a calendar year pursuant to the agreement.

26. *"Lost and unaccounted for water" means:*

    a. *With respect to a distribution system other than an untreated water municipal distribution system, the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by a municipal provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of water from any source, except direct use effluent, made by the municipal provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the municipal provider accounts for by a method of estimating water use approved by the director.*

    b. *With respect to an untreated water municipal distribution system, the total quantity of untreated water from any source, withdrawn, diverted or received by a large untreated water provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of untreated water from any source made by the provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the provider accounts for by a method of estimating water use approved by the director.*

27. *"Lost water" means untreated water from any source that enters an untreated water distribution system and is lost from the system during transportation or distribution due to seepage, evaporation, leaks, breaks, phreatophyte use or other similar or dissimilar causes.*

28. *"Mined groundwater" has the definition prescribed by A.R.S. § 45-561(9).*

29. *"Multifamily housing unit" means a mobile home in a mobile home park and any permanent housing unit having one or more common walls with another housing unit located in a multifamily residential structure, and includes a unit in a duplex, triplex, fourplex, condominium development, town home development, or apartment complex.*

30. *"Municipal distribution system" means a system of pipes, canals or other works within a municipal provider's service area that are owned and operated by the provider to collect, store, treat or deliver water for non-irrigation use.*

31. *"Municipal provider" means a city, town, private water company or irrigation district that supplies water for non-irrigation use.*

32. *"New individual user" means an individual user that begins receiving water from a municipal provider after adoption of the Third Management Plan.*

33. *"New large municipal provider" means a municipal provider that begins serving more than 250 acre-feet of water for non-irrigation use during a calendar year after January 1, 2000, not including untreated water served by a municipal provider that qualifies as a large untreated water provider.*

34. *"New multifamily housing units" means multifamily housing units that first begin using water on or after July 1, 2000.*

35. *"New multifamily population" means the portion of the service area population of a municipal provider that resides in new multifamily housing units.*

36. *"New non-residential customer" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105, a non-residential customer that begins receiving water from the provider after the provider is accepted for regulation under the program.*

37. *"New residential customer" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104, a residential customer that begins receiving water from the provider after the provider is accepted for regulation under the program.*

38. *"New single family housing units" means single family housing units that first begin using water on or after July 1, 2000.*

39. *"New single family population" means the portion of the service area population of a municipal provider that resides in new single family housing units.*

40. *"Non-residential customer" means a person who is supplied water by a municipal provider for a non-irrigation use other than a residential use.*

41. *"Non-residential exterior water use" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105, water supplied by the provider and used for exterior water use purposes by non-residential customers, other than individual users, within the provider's service area.*

42. *"Non-residential interior water use" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105, water supplied by the provider and used for interior water use purposes by non-residential customers, other than individual users, within the provider's service area.*

43. *"Reasonable Conservation Measures" or "RCMs" means policies, practices, rules, regulations, ordinances, or the use of devices, equipment or facilities, that meet either of the following criteria:*

    a. *An established and generally accepted practice among water providers that results in efficient use or conservation of water, or*

    b. *A practice for which sufficient data are available from existing water conservation projects to indicate that significant water conservation or conservation related benefits can be achieved; that the practice is technically and economically reasonable and not environmentally or socially unacceptable; and that the practice is not otherwise unreasonable for most water providers to implement.*

44. *"Residential customer" means a person who is supplied water by a municipal provider for a residential use.*

45. *"Residential exterior water use" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104, water supplied by the provider and used for exterior water use purposes by residential customers within the provider's service area.*

46. *"Residential interior water use" means, with respect to a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104, water supplied by the provider and used for interior water use purposes by residential customers within the provider's service area.*

47. *"Residential use" means a non-irrigation use of water related to the activities of a single family or multifamily housing unit or units, including exterior water use.*

48. *"Service area" has the definition prescribed by A.R.S. § 45-402.*

49. *"Service area population" means the number of people residing in housing units connected to distribution lines maintained by the municipal provider within its service area that are being served as of July 1 of the applicable year, as determined pursuant to section 5-103, subsection D.*

50. *"Service connection" means a coupling of a municipal provider's distribution system and its customer's water system.*

51. *"Single family housing unit" means a detached dwelling, including mobile homes not in mobile home parks.*

52. *"Small municipal provider" means a municipal provider that supplies 250 acre-feet or less of water for non-irrigation use during a calendar year, not including untreated water served by a municipal provider that qualifies as a large untreated water provider.*

53. *"Spillwater" means water, other than Colorado River water, released for beneficial use from storage, diversion, or distribution facilities to avoid spilling that would otherwise occur due to uncontrolled surface water inflows that exceed facility capacity.*

54. *"Turf-related facility" means any facility including cemeteries, golf courses, parks, schools, or common areas within housing developments with a water-intensive landscaped area of 10 or more acres. Turf-related facilities include those facilities listed in Appendix 6B.*

55. *"Untreated water" means water that is not treated to improve its quality and that is supplied by a municipal provider through a distribution system other than a potable water distribution system.*

56. *"Untreated water municipal distribution system" means a municipal distribution system operated by a large untreated water provider for the purpose of delivering untreated water for non-irrigation use.*

57. *"Water-intensive landscaped area" means, for a calendar year, an area of land that is watered with a permanent water application system and planted primarily with plants not*

listed in Appendix 5-L, (Low Water Use/Drought Tolerant Plant List or modifications to the list) and the total surface area of all bodies of water filled or refilled with water from any source, including effluent, that are an integral part of the landscaped area. Bodies of water used primarily for swimming purposes are not an integral part of a landscaped area.

5-102. Large Municipal Providers - Conservation Programs

A. *Beginning with the calendar year determined under section 5-103, subsection A, paragraph 2, and continuing until the first compliance date for any substitute requirement in the Fourth Management Plan, a large municipal provider shall be regulated under the Total Gallons Per Capita Per Day (GPCD) Program described in section 5-103, unless the provider has applied for and been accepted for regulation under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105, or is designated as an institutional provider under section 5-108.*

If a large municipal provider is accepted into the Non-Per Capita Conservation Program, the Alternative Conservation Program, or is designated as an institutional provider, the provider shall continue to comply with its total GPCD requirement until the first compliance date assigned by the director for the provider under the Alternative Conservation Program, the Non-Per Capita Conservation Program, or the Institutional Provider Program.

A large municipal provider that was regulated under the Non-Per Capita Conservation Program, the Alternative Conservation Program or the Institutional Provider Program under the Second Management Plan and that applies to be regulated under the same program in the Third Management Plan 180 days following adoption of the plan shall continue to be regulated under the Non-Per Capita Conservation Program, the Alternative Conservation Program or the Institutional Provider Program under the Second Management Plan, whichever applies, until January 1, 2002 or until the director approves or denies the provider's application under the Third Management Plan, whichever is later.

B. *A large municipal provider may apply for the Non-Per Capita Conservation Program as described in section 5-104. If the director approves the application, the provider shall comply with the requirements of the Non-Per Capita Conservation Program beginning on a date determined by the director but not later than January 1 of the year following the year in which the application is approved.*

C. *A large municipal provider may apply for the Alternative Conservation Program as described in section 5-105. If the director approves the application, the provider shall comply with the requirements of the Alternative Conservation Program beginning on a date determined by the director but not later than January 1 of the year following the year in which the application is approved.*

D. *A large municipal provider may apply for designation as an institutional provider pursuant to section 5-108. If the director approves the application, the provider shall comply with the institutional provider requirements assigned by the director beginning on a date determined by the director but not later than January 1 of the year following the year in which the application is approved.*

E. *A large untreated water provider shall comply with the requirements of section 5-107.*

F. All municipal providers shall comply with individual user requirements, distribution system requirements, and applicable monitoring and reporting requirements as prescribed in sections 5-112, 5-113, and 5-114.

5-103. Large Municipal Provider Total Gallons Per Capita Per Day Program

A. Total GPCD Requirement

1. Beginning with the calendar year determined under paragraph 2 of this subsection, and for each calendar year thereafter until the first compliance date for any substitute municipal conservation requirement in the Fourth Management Plan, a large municipal provider regulated under the total GPCD program shall not withdraw, divert or receive water from any source, except spillwater, direct use effluent, effluent recovered within the area of impact, and excluded CAP water, for non-irrigation use during a year in a total amount that exceeds its total GPCD requirement for the year as calculated in subsection B of this section, except as provided in the flexibility account provisions in section 5-106.

2. A large municipal provider regulated under the Total GPCD Program shall begin complying with its total GPCD requirements as calculated under subsection B of this section beginning with calendar year 2000, except that if the provider's total GPCD requirement for the year 2000 as calculated under subsection B of this section is lower than the provider's final total GPCD requirement under the Second Management Plan, the provider shall begin complying with its total GPCD requirements as calculated under subsection B of this section beginning with calendar year 2002.

B. Calculation of the Annual Total GPCD Requirement

A large municipal provider's total GPCD requirement for a year shall be calculated as follows:

1. For calendar years 2000 through 2004, multiply the provider's existing residential population for the year, as calculated pursuant to subsection D of this section, by the first intermediate GPCD component for existing residential population as assigned to the provider in Table 5-103.A.

For calendar years 2005 through 2009, multiply the provider's existing residential population for the year, as calculated pursuant to subsection D of this section, by the second intermediate GPCD component for existing residential population as assigned to the provider in Table 5-103.A.

For the calendar year 2010, and for each calendar year thereafter until the first compliance date for any substitute total GPCD requirement in the Fourth Management Plan, multiply the provider's existing residential population for the year, as calculated pursuant to subsection D of this section, by the final GPCD component for existing residential population as assigned to the provider in Table 5-103.A.

2. Multiply the provider's new single family population for the year, as calculated pursuant to subsection D of this section, by 57 GPCD.

3. Multiply the number of new single family housing units within the provider's service area as of July 1 of the calendar year in question by 178 GPHUD.

4. *Multiply the provider's new multifamily population for the year, as calculated pursuant to subsection D of this section, by 57 GPCD.*

5. *Multiply the number of new multifamily housing units within the provider's service area as of July 1 of the calendar year in question by 77 GPHUD.*

6. *Multiply the provider's total service area population for the year, as calculated pursuant to subsection D of this section, by the GPCD component for non-residential use as assigned to the provider in Table 5-103.A.*

7. *Divide the provider's allowable lost and unaccounted for water by the number of days in the calendar year. The provider's allowable lost and unaccounted for water is the lesser of the following:*

   a. *the provider's actual lost and unaccounted for water for the year, in gallons.*

   b. *an amount calculated by multiplying the total gallons of water from any source, except direct use effluent, withdrawn, diverted or received by the provider during the year by 10 percent.*

8. *Add the results from paragraphs 1 through 7 of this subsection, and then divide the sum by the provider's annual service area population as of July 1 of that year. The quotient is the provider's total GPCD requirement for the calendar year.*

C. Compliance with Total GPCD Requirement

The director shall determine if a large municipal provider is in compliance with its total GPCD requirement for a calendar year pursuant to the flexibility account provisions in section 5-106, using the provider's service area population as calculated in subsection D of this section.

D. Calculation of Large Municipal Provider's Service Area Population

The director shall calculate a large municipal provider's service area population for a calendar year as follows, unless the director has approved an alternative methodology for calculating the provider's service area population prior to the calendar year in question:

1. *Determine the number of existing single family housing units and existing multifamily housing units served by the provider's distribution system as of July 1, 2000, less any existing single family housing units and any existing multifamily housing units removed from the provider's distribution system between July 1, 2000 and June 30 of the calendar year in question.*

2. *Adjust these totals by the respective average annual vacancy rate for single family housing units and multifamily housing units as calculated from the most recent census or other approved source of information.*

3. *Multiply the adjusted number of existing single family housing units calculated in paragraph 2 of this paragraph by the average number of persons per occupied single family housing unit as calculated in accordance with the most recent census or other approved source of information.*

TABLE 5-103.A
GPCD COMPONENT REQUIREMENTS
FOR EXISTING RESIDENTIAL AND NON-RESIDENTIAL
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Existing Residential			Non-Residential
	TMP 1	TMP 2	TMP Final	
Adaman Mutual Water Company	108	107	105	30
AJ Water Facilities District	100	100	100	62
City of Avondale	118	109	100	36
AWC - Apache Junction	100	100	100	34
AWC - Superior	100	100	100	18
AWC - White Tanks	136	123	111	18
Berneil Water Company	421	407	392	18
Town of Buckeye	100	100	100	47
Carefree Water Company	205	198	191	341
Cave Creek Water Company	111	109	107	45
City of Chandler	127	123	119	66
Chaparral City Water Company	140	136	133	119
Citizens Utilities - Agua Fria	105	103	100	19
Citizens Utilities - Sun City	192	184	176	50
Citizens Utilities - Sun City West	160	157	155	26
Desert Hills Water Company	102	101	100	18
City of El Mirage	113	107	100	39
Town of Gilbert	138	135	131	53
City of Glendale	124	121	118	52
City of Goodyear	136	118	100	117
H2O Water Company	100	100	100	18
Litchfield Park Service Company	178	172	165	124
Luke Air Force Base	100	100	100	184
City of Mesa	130	116	103	51
Paradise Valley Water Company	436	421	406	240
City of Peoria	130	116	102	45

TABLE 5-103.A
GPCD COMPONENT REQUIREMENTS
FOR EXISTING RESIDENTIAL AND NON-RESIDENTIAL
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Existing Residential			Non-Residential
	TMP 1	TMP 2	TMP Final	
City of Phoenix	135	129	123	66
Pima Utilities	133	127	122	287
Queen Creek Water Company	194	175	156	30
Rio Verde Utilities	141	139	137	855
Rose Valley Water Company	172	166	160	18
City of Scottsdale	171	166	162	71
Sunrise Water Company	133	129	124	18
City of Tempe	128	124	121	113
City of Tolleson	123	120	117	35
Valley Utilities	116	108	100	18
Williams Air Park	101	101	100	308

4. *Multiply the adjusted number of existing multifamily housing units calculated in paragraph 2 of this subsection by the average number of persons per occupied multi-family housing unit as calculated in accordance with the most recent census or other approved source of information.*

5. *Add the products from paragraphs 3 and 4 of this subsection. The sum is the provider's existing residential population.*

6. *Determine the number of new single family housing units and new multifamily housing units added to the provider's distribution system between July 1 of the previous calendar year and July 1 of the calendar year in question, less any new single family and new multifamily housing units removed from the system during that period.*

7. *Adjust these totals by the respective average annual vacancy rate for single family housing units and multifamily housing units as calculated from the most recent census or other approved source of information.*

8. *Multiply the adjusted number of new single family housing units calculated in paragraph 7 of this subsection by the average number of persons per occupied single family housing unit as calculated in accordance with the most recent census or other approved source of information.*

9. *Multiply the adjusted number of new multifamily housing units calculated in paragraph 7 of this subsection by the average number of persons per occupied multifamily housing*

unit as calculated in accordance with the most recent census or other approved source of information.

10. *Add the product from paragraph 8 of this subsection to the provider's new single family population as of July 1 of the previous year and add the product from paragraph 9 of this subsection to the provider's new multifamily population as of July 1 of the previous year. The sums are the provider's new single family population and new multifamily population.*

11. *Add the results from paragraphs 5 and 10 of this subsection. The sum is the provider's service area population for the calendar year.*

E. Exclusion of Deliveries of Central Arizona Project Water from Total GPCD Requirement

1. Exclusion

A large municipal provider may apply to the director to have CAP water delivered by the provider to a non-residential customer excluded from the provider's total water use when determining the provider's compliance with its total GPCD requirement as established pursuant to subsection B of this section. The director shall grant a one time exclusion for a period not to exceed ten years if the director finds that all of the following apply:

a. The provider will ultimately serve direct use effluent to the non-residential customer from a wastewater treatment plant that is either in existence or planned for construction; the provider will begin replacing the deliveries of CAP water with direct use effluent as soon as direct use effluent becomes available for delivery to the non-residential customer from the treatment facility; and the provider will completely replace the deliveries of CAP water with direct use effluent within a reasonable period of time, not to exceed ten years.

b. The CAP water that the provider will deliver to the non-residential customer cannot be delivered through the provider's potable water distribution system to any of its customers located outside the boundaries of a water users association, as defined in A.R.S. § 10-140, because of treatment facility or distribution system limitations, and the provider's CAP water treatment facilities and potable water distribution system have a reasonable level of capacity.

c. Granting the exclusion will result in the non-residential customer receiving effluent sooner than it would if the exclusion is not granted, and the effluent that the non-residential customer will receive as a result of the exclusion would not otherwise be put to a direct beneficial use by the provider.

d. Neither the Non-Per Capita Conservation Program described in section 5-104 of this chapter nor the Alternative Conservation Program described in section 5-105 of this chapter are currently an appropriate conservation program for the provider.

e. If the non-residential customer is a turf-related facility, a large-scale cooling facility, or a publicly owned right-of-way, the customer will be required to comply with conservation requirements during the duration of the exclusion identical to the conservation requirements that would apply to the customer under section 5-112 of this chapter if the customer was using groundwater.

f. If the CAP water that the provider will deliver to the non-residential customer is to be recovered by the provider pursuant to a recovery well permit issued under Title 45, Chapter 3.1, Arizona Revised Statutes, the provider is unable to deliver CAP water to the customer except from a recovery well.

2. Duration of Exclusion

The duration of any exclusion granted pursuant to paragraph 1 of this subsection shall be determined by the director at the time the exclusion is granted and shall not exceed ten years. After the exclusion has become effective, the director may at any time rescind the exclusion, or reduce the amount of the exclusion as determined pursuant to paragraph 3 of this subsection, if the director determines that one of the following applies:

a. The large municipal provider is not delivering all available effluent to the non-residential customer.

b. The large municipal provider will not entirely replace the deliveries of CAP water with effluent by the date determined by the director to be reasonable at the time the exclusion was granted.

c. The large municipal provider's CAP water treatment facilities or potable water distribution system no longer have a reasonable level of capacity.

3. Amount of Exclusion

During the duration of any exclusion granted pursuant to paragraph 1 of this subsection, the amount of CAP water that shall be excluded from the large municipal provider's total water usage in any calendar year shall be calculated as follows:

a. Determine the amount of CAP water delivered by the provider to the non-residential customer during the calendar year and then subtract from that amount any amount of water used by the non-residential customer during the year in excess of the conservation requirements applicable to such use as set forth in section 5-112 of this chapter.

b. The amount of CAP water that shall be excluded from the provider's total water use during the calendar year shall be the volume from subparagraph a above, but not to exceed the lesser of the following:

1) The amount of effluent that will be available for direct delivery by the provider to the non-residential customer during the last year of the exclusion, as determined by the director at the time the exclusion is granted.

2) The amount of groundwater that would have been used by the non-residential customer during the year if the provider had not served CAP water to the customer, as determined by the director.

4. Agreement by Non-Residential Customer Not to Use Groundwater; Exception

An exclusion granted pursuant to paragraph 1 of this subsection shall not become effective until the non-residential customer agrees in writing that it will not use groundwater from a source other than the large municipal provider during the duration

of the exclusion, except during any temporary period in which the provider is unable to deliver a sufficient quantity of water to the customer because of distribution system failure or other emergency, and provided that the customer applies to the director in writing for permission to use the groundwater within seven days after commencement of the provider's distribution system failure or other emergency and the director approves the application in writing.

5. *Deliveries of Groundwater by Large Municipal Provider to Non-Residential Customer Included in GPCD Requirement; Exception*

   During the duration of any exclusion granted pursuant to paragraph 1 of this subsection, any groundwater delivered by the large municipal provider to the non-residential customer shall be included in determining the provider's compliance with its GPCD requirement, except for groundwater delivered by the provider to the non-residential customer during any temporary period, not to exceed 30 days, in which the provider is unable to deliver a sufficient quantity of CAP water or effluent to the customer because of distribution system failure or other emergency, and provided that the provider applies to the director in writing for an exclusion of such groundwater from its GPCD requirement within seven days after commencement of the distribution system failure or other emergency and the director approves the application in writing for a specified period of time.

5-104. Non-Per Capita Conservation Program

A. Eligibility for the Non-Per Capita Conservation Program

A large municipal provider may apply for the Non-Per Capita Conservation Program if any of the following applies:

1. *The provider is a member of a groundwater replenishment district established under Title 48, Chapter 27, Arizona Revised Statutes.*

2. *The service area of the provider has qualified as a member service area under Title 48, Chapter 22, Arizona Revised Statutes, or as a water district member under Title 48, Chapter 28, Arizona Revised Statutes, and the conditions established under A.R.S. § 45-576.01(B)(2) and (3) are met by the conservation district or the water district, as applicable, for the AMA in which the service area is located.*

3. *The provider has developed a plan to both:*

   a) *Reduce the proportion of mined groundwater supplied by it for use within its service area such that the result computed by dividing the volume of mined groundwater supplied by the provider for use within its service area in a year by the volume of all water supplied by the provider for use within its service area in that year does not exceed:*

      1) *Two-thirds for 2000.*
      2) *Three-fifths for 2001.*
      3) *Eight-fifteenths for 2002.*
      4) *Seven-fifteenths for 2003.*
      5) *Two-fifths for 2004.*
      6) *One-third for 2005.*

7) *Four-fifteenths for 2006.*
8) *One-fifth for 2007.*
9) *Two-fifteenths for 2008.*
10) *One-fifteenth for 2009.*

b) *Deliver no mined groundwater for use within its service area after January 1, 2010.*

4. *The provider is designated as having an assured water supply under rules adopted by the director pursuant to A.R.S. § 45-576.*

B. Application for Non-Per Capita Conservation Program

A large municipal provider's application for the Non-Per Capita Conservation Program must be approved by the provider's governing body, and must include the following:

1. *A description and evaluation, including implementation dates, of the provider's existing conservation programs.*

2. *A description of conservation programs the provider intends to implement if approved for the Non-Per Capita Conservation Program, including a time schedule for implementing the programs.*

3. *If the provider is applying for the Non-Per Capita Conservation Program under subsection A, paragraph 3, a water supply plan demonstrating that the provider will reduce the proportion of mined groundwater supplied by it within its service area to the proportions described in that subparagraph, and that it will deliver no mined groundwater after January 1, 2010.*

4. *If the provider intends to comply with subsection D of this section by implementing one or more substitute RCMs in lieu of a standard RCM, or if the provider requests the director to modify a level of conservation potential for the provider's service area pursuant to subsection D, paragraph 1, subparagraph a of this section, an analysis of water use within the provider's service area that includes all of the following:*

   a. *If the provider intends to implement one or more substitute RCMs, information demonstrating that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM or RCMs.*

   b. *The amount of water used each month during the past three years by each of the following water use sectors, as applicable: (1) residential (disaggregated by single family and multifamily), (2) commercial, (3) industrial, (4) turf-related facilities, (5) government, (6) construction, (7) distribution system losses, and (8) any other uses. The provider is not required to include this information if it has already been reported to the Department.*

   c. *An identification and evaluation of the water use sectors described in item b of this subparagraph that have the highest water conservation potential.*

5. *If the provider is requesting an individual incidental recharge factor under subsection C, paragraph 2 of this section:*

a. *A copy of a hydrological study that demonstrates the amount of water withdrawn, diverted or received for delivery by the provider for use within its service area during each of the preceding five years and the amount of incidental recharge that was attributable to the provider during those years. The study shall be prepared consistent with the methodology contained in Appendix 5-J.*

b. *A copy of a hydrological study projecting the average annual amount of water that will be withdrawn, diverted or received for delivery by the provider for use within its service area during the management period and the average annual amount of incidental recharge that will be attributable to the provider during the management period.*

6. *Any other information required by the director.*

C. *Incidental Recharge Factor*

1. *Standard Incidental Recharge Factor*

The standard incidental recharge factor for the Phoenix AMA for the third management period is 4 percent. The standard incidental recharge factor shall be used to calculate the amount of mined groundwater supplied during a year by a large municipal provider that applied for the Non-Per Capita Conservation Program under subsection A, paragraph 3 of this section, unless the provider applies for and is granted an individual incidental recharge factor pursuant to paragraph 2 of this subsection.

2. *Individual Incidental Recharge Factor*

A large municipal provider that applies for the Non-Per Capita Conservation Program under subsection A, paragraph 3 of this section may request an incidental recharge factor that is different than the standard incidental recharge factor set forth in paragraph 1 of this subsection by submitting the information described in subsection B, paragraph 5 of this section with its application. The director shall establish a different incidental recharge factor for the provider, as described in Appendix 5-J, if the information submitted by the provider demonstrates that the ratio of the average annual amount of incidental recharge expected to occur within the provider's service area during the third management period to the average annual amount of water expected to be supplied by the provider for use within its service area during the third management period is different than the standard incidental recharge factor. If the director establishes an individual incidental recharge factor for the provider under this paragraph, the individual incidental recharge factor shall be used to calculate the amount of mined groundwater supplied by the provider during a year.

D. *Criteria for Approval of Application*

A large municipal provider that applies for the Non-Per Capita Conservation Program shall be approved for the program only if all of the following conditions are satisfied, as applicable:

1. *The provider agrees in writing to implement RCMs that the director determines will, if properly implemented, result in the achievement of a water use efficiency within the provider's service area equivalent to the water use efficiency assumed in the provider's total GPCD requirements for the third management period. To comply with this*

requirement, the provider must agree in writing to implement the following RCMs for the following water use categories and programs beginning on a date agreed upon by the director and the provider:

a. Residential Water Use

1) Residential interior water use category - The provider shall agree in writing to implement the residential interior standard RCMs described in Appendix 5-I.1. In lieu of implementing one or both of the standard RCMs, the provider may agree to implement one or more of the residential interior substitute RCMs or system-related substitute RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.

2) Residential exterior water use category - The provider shall agree in writing to implement the residential exterior standard RCMs described in Appendix 5-I.1. In lieu of implementing one or more of the standard RCMs, the provider may agree to implement one or more of the residential exterior substitute RCMs or system-related substitute RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.

3) Implementation level - The provider shall agree to implement residential interior or exterior RCMs for existing residential customers at the implementation level (minimum, moderate, or maximum) that corresponds to the level of conservation potential that the director determined existed for water use by existing residential users within the provider's service area when the director established the provider's total GPCD requirements for the third management period, as shown in Appendix 5-E.

The director may modify a level of conservation potential shown for a provider in Appendix 5-E if the provider requests a modification in an application for administrative review pursuant to A.R.S. § 45-575(A) or in the provider's application for regulation under the Non-Per Capita Conservation Program, and the provider demonstrates that the level of conservation potential shown in Appendix 5-E is not accurate for the provider's service area. A provider requesting a modification of a level of conservation potential shall submit to the director a water use analysis containing the information described in subsection B, paragraph 4, of this section. If the level of conservation potential for water use by existing residential users as shown in Appendix 5-E, or as modified by the director, is "no reduction," the provider is not required to implement any RCMs for existing residential customers in that water use category.

b. Non-Residential Water Use

1) Non-residential interior water use category - The provider shall agree in writing to implement the non-residential interior standard RCMs described in Appendix 5-I.2. In lieu of implementing one or more of the standard RCMs, the provider

may agree to implement one or more of the non-residential interior substitute RCMs or system-related RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.

2) *Non-residential exterior water use category - The provider shall agree in writing to implement the non-residential exterior standard RCMs described in Appendix 5-I.2. In lieu of implementing one or both of the standard RCMs, the provider may agree to implement one or more of the non-residential exterior substitute RCMs or system-related RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.*

c. *Public Education Program*

The provider shall agree in writing to implement the education standard RCM described in Appendix 5-I.3. In lieu of implementing the standard RCM, the provider may agree to implement one or more of the education substitute RCMs listed in the substitute RCM list described in Appendix 5-I.4. The substituted RCM or RCMs must not duplicate other RCMs that the provider will implement as part of the Non-Per Capita Conservation Program.

2. *If the provider is applying for the Non-Per Capita Conservation Program under subsection A, paragraph 1 of this section, the provider will be accepted into the program only if the conditions established in A.R.S. § 45-576.01(A)(2) and (3) are met by the groundwater replenishment district of which the provider is a member.*

3. *If the provider is applying for the Non-Per Capita Conservation Program under subsection A, paragraph 2 of this section, the provider will be accepted into the program only if the conditions established in A.R.S. § 45-576.01(B)(2) and (3) are met for the AMA by the multi-county water conservation district or AMA water district of which the provider is a member.*

4. *If the provider is applying for the Non-Per Capita Conservation Program under subsection A, paragraph 3 of this section, the provider will be accepted into the program only if the director has determined that the provider will reduce the proportion of mined groundwater supplied within its service area to the proportions described in that subparagraph.*

5. *If the provider is applying for the Non-Per Capita Conservation Program under subsection A, paragraph 4 of this section, the provider will be accepted into the program only if the director determines that the provider is designated as having an assured water supply under the rules adopted by the director under A.R.S. § 45-576.*

E. Non-Per Capita Conservation Program Requirements

A large municipal provider regulated under the Non-Per Capita Conservation Program shall comply with the following requirements, as applicable, until the effective date of any substitute conservation requirements established in the Fourth Management Plan:

1. *The provider shall implement the RCMs agreed to in writing under subsection D, paragraph 1 of this section beginning on a date agreed upon by the director and the provider.*

2. *If the provider applied for the Non-Per Capita Conservation Program under subsection A, paragraph 3 of this section, the provider shall reduce the proportion of mined groundwater supplied within its service area to the proportions described in that paragraph. A provider's failure to comply with this requirement during any year will be excused if the provider demonstrates to the director's satisfaction that the failure was due to drought conditions or the failure of a surface water distribution system.*

3. *If the provider applied for the Non-Per Capita Conservation Program under subsection A, paragraph 4 of this section, the provider shall not supply groundwater for use within its service area in an amount that exceeds the amount of groundwater that the provider may supply for use within its service area consistent with the rules adopted by the director pursuant to A.R.S. § 45-576. If the provider's designation of assured water supply is revoked or otherwise terminates after the provider is accepted into the program, the amount of groundwater the provider may supply for use within its service area consistent with the rules shall be determined by the director as the amount of groundwater the provider would have been allowed to supply under the rules if the provider's designation of assured water supply had not been revoked or terminated.*

5-105. Alternative Conservation Program

A. Eligibility for the Alternative Conservation Program

A large municipal provider is eligible to apply for the Alternative Conservation Program if one of the following applies:

1. *The provider is designated as having an assured water supply under rules adopted by the director pursuant to A.R.S. § 45-576.*

2. *The provider agrees to limit its annual use of groundwater withdrawn from within the AMA as provided in subsection C, paragraph 1, subparagraph a, item 2 of this section.*

B. Application for Alternative Conservation Program

A large municipal provider's application for the Alternative Conservation Program must be approved by the provider's governing body, and must include the following:

1. *A plan to limit the provider's overall groundwater withdrawals as required by subsection C, paragraph 1 of this section.*

2. *A description and evaluation, including implementation dates, of the provider's existing conservation programs.*

3. *A description of the proposed conservation strategies for all existing and new non-residential customers to be implemented by the provider under this program and the provider's schedule for implementation of all proposed conservation measures.*

4. *If the provider intends to comply with subsection C, paragraph 3 of this section by implementing one or more substitute non-residential RCMs in lieu of a standard non-residential RCM, an analysis of water use within the provider's service area that includes all of the following:*

   a. *A demonstration that the substituted RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.*

   b. *The amount of water used each month during the past three years by each of the following water use sectors, as applicable: (1) residential (disaggregated by single family and multifamily), (2) commercial, (3) industrial, (4) turf-related facilities, (5) government, (6) construction, (7) distribution system losses, and (8) any other uses. The provider is not required to include this information if it has already been reported to the Department.*

   c. *An identification and evaluation of the water use sectors described in subparagraph b of this paragraph that have the highest water conservation potential.*

C. Alternative Conservation Program Requirements

1. *Groundwater Use Limitation Requirement*

   a. *Beginning with a calendar year agreed upon by the director and a large municipal provider regulated under the Alternative Conservation Program, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, the provider shall limit its annual use of groundwater withdrawn from within the AMA to the following, as applicable:*

      1) If the provider is designated as having an assured water supply under the rules adopted by the director pursuant to A.R.S. § 45-576, the amount of groundwater that the provider may use consistent with the rules, including any amount of groundwater that will be replenished by a conservation district pursuant to Title 48, Chapter 22, Arizona Revised Statutes.

      2) If the provider is not designated as having an assured water supply under the rules adopted by the director pursuant to A.R.S. § 45-576, one of the following, as applicable:

         a) If the provider was serving water as a large municipal provider on or before January 1, 1990, the provider's largest legal groundwater use during any one calendar year from calendar year 1980 through calendar year 1989.

         b) If the provider began serving water as a large municipal provider after January 1, 1990 but before January 1, 2000, 50 percent of the provider's largest legal groundwater use during any one calendar year from January 1, 1990 through calendar year 1999.

b. The large municipal provider may achieve compliance with the groundwater use limitation requirement described in subparagraph a, item 2 of this paragraph by permanently extinguishing or causing to be permanently extinguished grandfathered rights to groundwater as described in subparagraph c of this paragraph, by serving groundwater that will be replenished by a conservation district pursuant to Title 48, Chapter 22, Arizona Revised Statutes, by using remediated groundwater that is consistent with the accounting for surface water as provided in section 5-115, or by substituting non-groundwater supplies or groundwater withdrawn from outside the AMA for groundwater withdrawn from within the AMA, or by a combination of these methods.

c. Extinguishment of Groundwater Uses Associated with Grandfathered Rights

1) Applicability

Only irrigation grandfathered rights, Type 1 non-irrigation grandfathered rights and Type 2 non-irrigation grandfathered rights, as described in A.R.S. §§ 45-462 through 45-465, may be extinguished to meet the groundwater use limitation requirement. The large municipal provider shall not receive credit toward the achievement of the groundwater use limitation requirement for the extinguishment of either a Type 2 non-irrigation grandfathered right used for electrical energy generation or mineral extraction or processing purposes, or a Type 1 or Type 2 non-irrigation grandfathered right owned or previously owned by a municipal provider and used or previously used to serve the municipal provider's service area.

2) Annual Credits

The director shall determine the amount of annual credit a large municipal provider obtains for extinguishment of grandfathered rights to groundwater as follows:

a) For each irrigation grandfathered right extinguished or caused to be extinguished by the provider, the annual credit shall be the amount calculated by multiplying 1.5 acre-feet per acre by the number of water duty acres associated with the extinguishment, less any debits, in acre-feet, in the farm's operating flexibility account at the time the right is extinguished.

b) For each Type 1 non-irrigation grandfathered right or portion of such right extinguished or caused to be extinguished by the provider, the annual credit shall be the amount calculated by multiplying 1.5 acre-feet per acre by the number of acres to which the Type 1 non-irrigation grandfathered right is appurtenant, or a proportional amount thereof if only a portion of the right is extinguished.

c) For each Type 2 non-irrigation grandfathered right extinguished or caused to be extinguished by the provider, the annual credit shall be the full amount, in acre-feet, of the certificated Type 2 non-irrigation grandfathered right.

3) *Proof of Extinguishment*

In order for a large municipal provider to obtain an annual credit for extinguishing or causing to be extinguished a grandfathered right to groundwater, the holder of the grandfathered right must deliver the Certificate of Grandfathered Right to the director before the calendar year in which the credit will be used, request that the grandfathered right be extinguished, and direct that the provider receive the annual credit. Only one provider may receive annual credit for any one portion of a grandfathered right that has been extinguished.

d. *Compliance*

The director shall determine whether a large municipal provider is in compliance with its groundwater use limitation requirement, as described in subparagraph a, item 2) of this paragraph in a calendar year as follows:

1) *Add together the amount of annual credits received by the provider for extinguishing grandfathered rights to groundwater after January 1, 1990 pursuant to subparagraph c of this paragraph and pursuant to the Alternative Conservation Program in the second management plan.*

2) *Calculate the total volume of groundwater, in acre-feet, which the provider withdrew, diverted or received during the calendar year for use within the provider's service area. In making this calculation, the director shall not include any groundwater that a conservation district replenished or is obligated to replenish under Title 48, Chapter 22, Arizona Revised Statutes or any remediated groundwater qualifying under section 5-115.*

3) *Subtract the amount calculated in item 1) above from the volume calculated in item 2) above.*

4) *A provider is in compliance with its groundwater use limitation requirement if the amount calculated in item 3) of this subparagraph is equal to or less than the following, as applicable:*

a) *If the provider was serving water as a large municipal provider on or before January 1, 1990, the provider's largest legal groundwater use during any one calendar year from calendar year 1980 through calendar year 1989.*

b) *If the provider began serving water as a large municipal provider after January 1, 1990 but before January 1, 2000, 50 percent of the provider's largest legal groundwater use during any one calendar year from January 1, 1989 through calendar year 1999.*

Annual credits that are not needed by the provider to comply with its groundwater use limitation requirement in one calendar year shall not carry forward to any following calendar year.

2. *Residential GPCD Requirement*

a. *Beginning with a calendar year agreed upon by the director and a large municipal provider regulated under the Alternative Conservation Program, and for each calendar*

year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, the provider shall not serve water from any source, except spillwater, direct use effluent, and effluent recovered from within the area of impact, for residential use during a calendar year in a total amount that exceeds its residential GPCD requirement for the year, except as provided in the flexibility account provisions in section 5-106. Each year, the annual residential GPCD requirement for a provider regulated under the Alternative Conservation Program shall be calculated as follows:

1) *For each calendar year through 2004, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, subsection D, by the first intermediate GPCD component for existing residential population as assigned to the provider in Table 5-103.A.*

   For calendar years 2005 through 2009, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, subsection D, by the second intermediate GPCD component for existing residential population as assigned to the provider in Table 5-103.A.

   For the calendar year 2010, and for each calendar year thereafter until the first compliance date for any substitute GPCD requirement in the Fourth Management Plan, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, subsection D, by the final GPCD component for existing residential population as assigned to the provider in Table 5-103.A.

2) *Multiply the provider's new single family population for the year, as calculated pursuant to section 5-103, subsection D, by 57 GPCD.*

3) *Multiply the number of new single family housing units within the provider's service area as of July 1 of the calendar year in question by 178 GPHUD.*

4) *Multiply the provider's new multifamily population for the year, as calculated pursuant to section 5-103, subsection D, by 57 GPCD.*

5) *Multiply the number of new multifamily housing units within the provider's service area as of July 1 of the calendar year in question by 77 GPHUD.*

6) *Add the products from items 1) through 5) of this subparagraph, and then divide the sum by the provider's service area population as of July 1 of the calendar year. The quotient is the provider's residential GPCD requirement for the calendar year.*

b. *Compliance with Residential GPCD Requirement*

   The director shall determine if a large municipal provider regulated under the Alternative Conservation Program is in compliance with its residential GPCD requirement pursuant to the flexibility account provisions in section 5-106.

3. *Non-Residential Requirement*

   a. *A large municipal provider regulated under the Alternative Conservation Program shall agree in writing to implement the following non-residential RCMs beginning on a date agreed upon by the director and the provider:*

1) *Non-Residential Interior Requirements - The provider shall agree in writing to implement the non-residential interior standard RCMs described in Appendix 5-I.2. In lieu of implementing one or more of the standard RCMs, the provider may agree to implement one or more of the non-residential interior substitute RCMs or system-related RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.*

2) *Non-Residential Exterior Requirements - The provider shall agree in writing to implement the non-residential exterior standard RCMs described in Appendix 5-I.2. In lieu of implementing one or both of the standard RCMs, the provider may agree to implement one or more of the non-residential exterior substitute RCMs or system-related RCMs listed in the substitute RCM list described in Appendix 5-I.4 if the director determines that the substitute RCM or RCMs will be designed to achieve a water use efficiency within the provider's service area equivalent to the efficiency that would result from implementation of the standard RCM.*

5-106. Compliance with Total GPCD Requirement and Residential GPCD Requirement - Flexibility Account

A. Total GPCD Program Flexibility Account

The director shall determine if a large municipal provider regulated under the Total Gallons Per Capita Per Day Program is in compliance with its annual total GPCD requirement through the maintenance of a flexibility account for the provider that shall operate as follows:

1. *Each provider regulated under the Total Gallons Per Capita Per Day Program shall be assigned a flexibility account. The beginning balance in the flexibility account of a provider that was regulated under the Total Gallons Per Capita Per Day Program in the Second Management Plan shall be the ending balance in the flexibility account maintained for the provider under section 5-105 of the Second Management Plan. The beginning balance in the flexibility account of all other large municipal providers shall be zero.*

2. *Following each calendar year in which the provider withdraws, diverts or receives groundwater for non-irrigation use, beginning with the calendar year determined under section 5-103, subsection A, paragraph 2, or the calendar year in which the provider first becomes a large municipal provider, whichever is later, the director shall adjust the provider's flexibility account as follows:*

    a. *Determine the total gallons of water from any source, except direct use effluent, effluent recovered from within the area of impact, spillwater, and excluded CAP water, withdrawn, diverted or received by the provider during the calendar year for non-irrigation use, and then subtract that amount from the amount of water the provider could legally withdraw, divert or receive during the calendar year for non-irrigation use, as calculated in subparagraph d of this paragraph.*

    b. *If the result in subparagraph a above is negative, debit the flexibility account by this volume.*

c. *If the result in subparagraph a above is positive, credit the flexibility account by this volume.*

d. *The amount of water that a provider regulated under the Total Gallons Per Capita Per Day Program can legally withdraw, divert or receive for non-irrigation use during a calendar year is calculated by multiplying the provider's total GPCD requirement for the calendar year, as calculated pursuant to section 5-103, subsection B, by the provider's service area population as of July 1 of the year, as calculated pursuant to section 5-103 subsection D, and then multiplying the product by the number of days in the calendar year.*

3. *The account balance existing in a provider's flexibility account after the adjustment provided for in paragraph 2 of this subsection is made shall carry forward subject to the following limitations:*

a. *The maximum positive account balance allowed in the flexibility account of a provider regulated under the Total Gallons Per Capita Per Day Program shall be calculated by multiplying the provider's service area population as of July 1 of the calendar year by a GPCD rate of 60, and then multiplying that product by the number of days in the calendar year. If the account balance exceeds the maximum positive account balance after any credits are registered, the balance carried forward shall equal the maximum positive account balance allowed in the provider's flexibility account for that year.*

b. *The maximum negative account balance allowed in the flexibility account of a provider regulated under the Total Gallons Per Capita Per Day Program shall be calculated by multiplying the provider's service area population as of July 1 of the calendar by a GPCD rate of -20, and then multiplying that product by the number of days in the calendar year. If the account balance exceeds the maximum negative account balance after any debits are registered, the balance carried forward shall equal the maximum negative account balance allowed in the provider's flexibility account for that year.*

B. Alternative Conservation Program Flexibility Account

The director shall determine if a large municipal provider regulated under the Alternative Conservation Program is in compliance with its annual residential GPCD requirement through the maintenance of a flexibility account for the provider that shall operate as follows:

1. *Each provider regulated under the Alternative Conservation Program shall be assigned a flexibility account with a beginning balance to be calculated by the director based on the ending balance in the provider's flexibility account while the provider was regulated under the Total Gallons Per Capita Per Day Program or under the Alternative Conservation Program of the Second Management Plan, whichever applies.*

2. *Following each calendar year in which the provider delivers groundwater for residential use, beginning with the calendar year agreed upon by the director and the provider, the director shall adjust the provider's flexibility account balance as follows:*

a. *Determine the total gallons of water from any source, except spillwater, direct use effluent, and effluent recovered from within the area of impact, served by the provider during the calendar year for residential use, and then subtract that amount from the*

amount of water the provider could legally serve during the calendar year for residential use, as calculated in subparagraph d of this paragraph.

b. If the result in paragraph a above is negative, debit the flexibility account by this volume.

c. If the result in paragraph a above is positive, credit the flexibility account by this volume.

d. The amount of water that a provider regulated under the Alternative Conservation Program can legally serve for residential use during a calendar year is calculated by multiplying the provider's residential GPCD requirement for the calendar year, as calculated pursuant to section 5-105, subsection C, paragraph 2, by the provider's service area population as of July 1 of the year as calculated pursuant to section 5-103, subsection D, and then multiplying the product by the number of days in the calendar year.

3. The account balance existing in a provider's flexibility account after the adjustment provided for in paragraph 2 of this subsection is made shall carry forward subject to the following limitations:

a. The maximum positive account balance allowed in the flexibility account of a provider regulated under the Alternative Conservation Program shall be calculated by multiplying the provider's service area population as of July 1 of the calendar by a GPCD rate of 45, and then multiplying that product by the number of days in the calendar year. If the account balance exceeds the maximum positive account balance after any credits are registered, the balance carried forward shall equal the maximum positive account balance allowed in the provider's flexibility account for that year.

b. The maximum negative account balance allowed in the flexibility account of a provider regulated under the Alternative Conservation Program shall be calculated by multiplying the provider's service area population as of July 1 of the calendar year by a GPCD rate of -15, and then multiplying that product by the number of days in the calendar year. If the account balance exceeds the maximum negative account balance after any debits are registered, the balance carried forward shall equal the maximum negative account balance allowed in the provider's flexibility account for that year.

C. Compliance Status

If the adjustment to a large municipal provider's flexibility account following a calendar year as provided for in subsection A or B of this section causes the account to have a negative account balance that exceeds the maximum negative account balance allowed in the provider's flexibility account for the year as calculated in subsection A, paragraph 3 or subsection B, paragraph 3, the provider is out of compliance for that calendar year.

5-107. Conservation Requirements for Large Untreated Water Providers

A. Rate of Use Requirement

Beginning on January 1, 2002, and continuing thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, a large untreated water provider

shall not serve an amount of untreated water during a calendar year that exceeds an amount calculated as follows:

1. *Determine the number of gross acres of land to which the provider delivers untreated water during the calendar year. Gross acres do not include those acres regulated as a turf-related facility under section 5-112, subsection A, paragraph 1.*

2. *Multiply the number of gross acres determined in paragraph 1 of this subsection above by an average annual application rate of 4.0 acre-feet of untreated water per gross acre.*

B. Compliance

A large untreated water provider is in compliance with its rate of use requirement as set forth in subsection A of this section for a calendar year if one of the following applies:

1. *The amount of untreated water served by the provider during the calendar year does not exceed the amount of water calculated in subsection A of this section; or*

2. *The aggregate amount of untreated water served by the provider during that calendar year and the preceding two calendar years divided by three does not exceed the sum of the amount of untreated water calculated in subsection A of this section for those three years divided by three.*

5-108. Conservation Requirements for Institutional Providers

A. *If a large municipal provider operates primarily for the purpose of serving water to institutions, including prisons, hospitals, military installations, airparks and schools, and supplies or expects to supply more than 90 percent of its total non-irrigation deliveries to one or more of these institutions, the provider may apply to the director for designation as an institutional provider. The director may deem a facility other than one of those listed above as an institution if its water use characteristics are similar to the types of institutions listed above.*

B. *A large municipal provider regulated as an institutional provider in the Second Management Plan may reapply to the director to be designated as an institutional provider under the Third Management Plan any time after it has been noticed of its total GPCD requirements for the Third Management Plan.*

C. *A large municipal provider applying for designation as an institutional provider shall apply on a form prescribed and furnished by the director. The provider shall supply information in sufficient detail to allow the director to evaluate the provider's conservation potential and to establish appropriate conservation requirements for the provider.*

D. *The director shall approve a large municipal provider's application for designation as an institutional provider if the provider meets the criteria in subsection A of this section, and demonstrates that it does not qualify for the Non-Per Capita Conservation Program or the Alternative Conservation Program.*

E. *Each large municipal provider designated as an institutional provider shall be assigned mandatory conservation requirements and monitoring and reporting requirements, including a maximum residential GPCD requirement and appropriate conservation measures for non-residential uses. The institutional provider shall comply with the assigned conservation*

requirements by the date specified by the director, but not later than January 1 of the year following the year in which the provider's application is approved, and shall remain in compliance with those requirements until the first compliance date for any substitute requirements in the Fourth Management Plan.

5-109. Consolidation of Municipal Provider Service Areas; Acquisition of a Portion of Another Municipal Provider's Service Area

A. Notification

1. *If two or more municipal providers consolidate their service areas into one service area, the consolidated provider shall notify the Department of the consolidation within 30 days after the consolidation becomes effective.*

2. *If a municipal provider acquires a portion of another municipal provider's existing service area, both the acquiring provider and the conveying provider shall notify the Department of the acquisition within 30 days after the acquisition becomes effective.*

B. Regulation of Consolidated Provider

1. *Upon consolidation, a consolidated provider that qualifies as a large municipal provider shall be regulated under the Total GPCD Program described in section 5-103, unless the consolidated provider applies for and is accepted for regulation under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105.*

2. *If the consolidated provider is regulated under the Total GPCD Program, the director shall establish a total GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' total GPCD requirements as set forth in Appendix 5-C.1. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection A, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.*

3. *If the consolidated provider is accepted for regulation under the Alternative Conservation Program, the director shall establish a residential GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' residential GPCD requirements as set forth in Appendix 5-K. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection B, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.*

4. *If the consolidated provider applies for regulation under the Non-Per Capita Conservation Program or the Alternative Conservation Program and one of the consolidating providers was regulated under that program immediately prior to consolidation, the consolidated provider's application for regulation under the program shall include only the information required by section 5-104 or section 5-105 that has changed since the consolidating provider filed its application for the program.*

*C. **Regulation of Acquiring Provider***

1. Except as provided in paragraph 2 of this subsection, a large municipal provider that acquires a portion of another provider's existing service area shall continue to be regulated under the conservation program that the acquiring provider was regulated under immediately prior to the acquisition.

2. If the acquiring provider was regulated under either the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105 immediately prior to the acquisition, the acquiring provider shall be regulated under the Total GPCD Program beginning on January 1 of the first calendar year after the acquisition unless the acquiring provider reapplies to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program, whichever is applicable, within 180 days after the acquisition. If the acquiring provider reapplies to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program within 180 days after the acquisition, both of the following shall apply:

a. The provider shall continue to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program, whichever is applicable, until the director makes a final decision on the acquiring provider's application.

b. The acquiring provider's application shall include only the information required by section 5-104 or section 5-105 that has changed since the acquiring provider filed its original application for the program.

3. If the acquiring provider is regulated under the Total GPCD Program after the acquisition, the director shall establish a new total GPCD requirement for the acquiring provider consistent with the methodology used to establish the provider's total GPCD requirements in Appendix 5-C.1, taking into account the addition to the provider's service area. The director may also adjust the balance in the acquiring provider's flexibility account maintained under section 5-106, subsection A, to take into account the balance in the conveying provider's flexibility account at the time of the conveyance.

4. If the acquiring provider is regulated under the Alternative Conservation Program after the acquisition, the director shall establish a new residential GPCD requirement for the provider consistent with the methodology used to establish the residential GPCD requirements in Appendix 5-K, taking into account the addition to the provider's service area. The director may also adjust the balance in the acquiring provider's flexibility account maintained under section 5-106, subsection A, to take into account the balance in the conveying provider's flexibility account at the time of the conveyance.

*D. **Regulation of Conveying Provider***

1. Except as provided in paragraph 2 of this subsection, a large municipal provider that conveys a portion of its service area to another provider and that qualifies as a large municipal provider after the conveyance shall continue to be regulated under the conservation program that the provider was regulated under immediately prior to the conveyance.

2. If the conveying provider was regulated under either the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described

in section 5-105 immediately prior to the acquisition and if the conveying provider qualifies as a large municipal provider after the conveyance, the conveying provider shall be regulated under the Total GPCD Program beginning on January 1 of the first calendar year after the acquisition unless the provider reapplies to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program, whichever is applicable, within 180 days after the conveyance. If the conveying provider reapplies to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program within 180 days after the conveyance, both of the following shall apply:

a. *The provider shall continue to be regulated under the Non-Per Capita Conservation Program or the Alternative Conservation Program, whichever is applicable, until the director makes a final decision on the provider's application.*

b. *The provider's application shall include only the information required by section 5-104 or section 5-105 that has changed since the provider filed its original application for the program.*

3. *If the conveying provider is regulated under the Total GPCD Program after the conveyance, the director shall establish a new total GPCD requirement for the provider consistent with the methodology used to establish the total GPCD requirements in Appendix 5-C.1, taking into account the reduction in the provider's service area. The director may also adjust the balance in the conveying provider's flexibility account maintained under section 5-106 to take into account the reduction in the provider's service area.*

4. *If the conveying provider is regulated under the Alternative Conservation Program after the conveyance, the director shall establish a new residential GPCD requirement for the provider consistent with the methodology used to establish the residential GPCD requirements in Appendix 5-K, taking into account the reduction in the provider's service area. The director may also adjust the balance in the conveying provider's flexibility account maintained under section 5-106 to take into account the reduction in the provider's service area.*

5-110. Conservation Requirements for New Large Municipal Providers

A. Total GPCD Program

1. *A new large municipal provider shall be assigned to the Total GPCD Program described in section 5-103 and shall comply with its annual total GPCD requirement no later than the second full calendar year after the provider is given written notice of the requirement by the director, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan.*

2. *A new large municipal provider's total GPCD requirement for a year shall be calculated as follows:*

a. *For calendar years 2002 through 2004, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, by the provider's first intermediate GPCD component for existing residential population as determined by the director after the provider qualifies as a new large provider. In determining the provider's first intermediate GPCD component for existing residential population,*

the director shall calculate the existing residential component consistent with the methodology used to calculate the existing residential component for existing large municipal providers, taking into consideration already existing conservation measures.

For calendar years 2005 through 2009, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, by the provider's second intermediate GPCD component for existing residential population as determined by the director after the provider qualifies as a new large provider. In determining the provider's second intermediate GPCD component for existing residential population, the director shall calculate the existing residential component consistent with the methodology used to calculate the existing residential component for existing large municipal providers, taking into consideration already existing conservation measures.

For the calendar year 2010, and for each calendar year thereafter until the first compliance date for any substitute total GPCD requirement in the Fourth Management Plan, multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, by the provider's final GPCD component for existing residential population as determined by the director after the provider qualifies as a new large provider. In determining the provider's final GPCD component for existing residential population, the director shall calculate the existing residential component consistent with the methodology used to calculate the existing residential component for existing large municipal providers, taking into consideration already existing conservation measures.

b. *Multiply the provider's new single family population for the year, as calculated pursuant section 5-103, subsection D, by 57 GPCD.*

c. *Multiply the number of new single family housing units within the provider's service area as of July 1 of the calendar year in question by 178 GPHUD.*

d. *Multiply the provider's new multifamily population for the year, as calculated pursuant to section 5-103, subsection D, by 57 GPCD.*

e. *Multiply the number of new multifamily housing units within the provider's service area as of July 1 of the calendar year in question by 77 GPHUD.*

f. *Determine the provider's non-residential GPCD by dividing the total non-residential water delivered, in gallons, during the calendar year by the service area population for the calendar year, as calculated pursuant to section 5-103, subsection D, and dividing by the number of days in the calendar year. The non-residential GPCD component equals the non-residential GPCD rate for the calendar year up to 18 GPCD. If the non-residential GPCD rate for the calendar year is greater than 18 GPCD, the non-residential component shall be 18 GPCD.*

g. *Divide the provider's allowable lost and unaccounted for water by the number of days in the calendar year. The provider's allowable lost and unaccounted for water is the lesser of the following:*

   1) the provider's actual lost and unaccounted for water for the year, in gallons.

2) *an amount calculated by multiplying the total gallons of water from any source, except direct use effluent, withdrawn, diverted or received by the provider during the year for non-irrigation uses by 10 percent.*

h. *Add the results from paragraphs a through g of this section, and then divide the sum by the provider's annual service area population as of July 1 of that year, as determined pursuant to section 5-103, subsection D. The quotient is the provider's total GPCD requirement for the calendar year.*

3. *The director shall determine if a new large municipal provider is in compliance with its annual total GPCD requirement pursuant to the flexibility account provisions in section 5-106.*

B. Non-Per Capita Conservation Program

A new large municipal provider may apply for regulation under the Non-Per Capita Conservation Program in accordance with section 5-104.

C. Alternative Conservation Program

1. *Application*

A new large municipal provider may apply for regulation under the Alternative Conservation Program in accordance with section 5-105.

2. *Substitute Groundwater Use Limitation Requirement*

A new large municipal provider accepted into the Alternative Conservation Program is exempt from complying with the groundwater use limitation requirement as described in section 5-105, subsection C, paragraph 1, subparagraph a, but shall limit its annual groundwater use to the following amount as applicable:

a. *If the provider is designated as having an assured water supply under the rules adopted by the director pursuant to A.R.S. § 45-576, the amount the provider is allowed to use under those rules.*

b. *If the provider is not designated as having an assured water supply under the rules adopted by the director pursuant to A.R.S. § 45-576, the amount that it would be allowed to use if it was designated as having an assured water supply under those rules, as determined by the director.*

3. *Annual Residential GPCD Requirement*

a. *Requirement*

A new large municipal provider regulated under the Alternative Conservation Program shall comply with its annual residential GPCD requirement for each calendar year as described in section 5-105, subsection C, paragraph 2, subparagraph a.

b. Calculation of Annual Residential GPCD Requirement

Each year the annual residential GPCD requirement for a new large municipal provider regulated under the Alternative Conservation Program shall be calculated as follows:

1) Multiply the provider's existing residential population for the year, as calculated pursuant to section 5-103, subsection D, by the GPCD component for existing residential population as determined by the director. The GPCD components shall assume the implementation of conservation measures appropriate for the characteristics of the provider's service area, taking into consideration already existing conservation measures.

2) Multiply the provider's new single family population for the year, as calculated pursuant to section 5-103, subsection D, by 57 GPCD.

3) Multiply the number of new single family housing units within the provider's service area as of July 1 of the calendar year in question by 178 GPHUD.

4) Multiply the provider's new multifamily population for the year, as calculated pursuant to section 5-103, subsection D, by 57 GPCD.

5) Multiply the number of new multifamily housing units within the provider's service area as of July 1 of the calendar year in question by 77 GPHUD.

6) Add the products from items 1) through 5) of this subparagraph, and then divide the sum by the provider's service area population as of July 1 of the calendar year. The quotient is the provider's residential GPCD requirement for the calendar year.

c. Compliance with Annual Residential GPCD Requirement

The director shall determine if a new large municipal provider regulated under the Alternative Conservation Program is in compliance with its annual residential GPCD requirement pursuant to the flexibility account provisions in section 5-106.

4. Non-Residential Conservation Programs

A new large municipal provider regulated under the Alternative Conservation Program shall implement conservation programs for its non-residential customers in accordance with section 5-105, subsection C, paragraph 3.

5-111. Conservation Requirements for Small Municipal Providers

A. By January 1, 2002, or upon commencement of service of water, whichever is later, and until the first compliance date for any substitute requirements in the Fourth Management Plan, a small municipal provider shall adopt and implement a program to achieve the following goals:

1. Minimize waste of all water supplies.

2. Maximize efficiency in outdoor watering.

3. *Encourage reuse of water supplies.*

4. *Reduce its total GPCD usage.*

5-112. Individual User Requirements for Municipal Providers and Individual Users

A. Individual User Requirements

Beginning January 1, 2002, or upon commencement of service of water, whichever is later, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, the municipal provider or individual user responsible for compliance with the individual user requirements under subsection B of this section shall comply with the following, as applicable:

1. *The municipal provider or individual user shall serve water to, or use water within, a turf-related facility only in accordance with sections 6-302 through 6-309 of the Industrial Chapter of the Third Management Plan, and shall comply with the monitoring and reporting requirements set forth in section 6-310 of the Industrial Chapter, as though the individual user were an industrial user. The person responsible for compliance shall also comply with the conservation requirements contained in section 6-202 of the Industrial Chapter, if applicable, as though the individual user were an industrial user.*

2. *The municipal provider or individual user shall serve water to, or use water within, a large-scale cooling facility only if the person using water at the facility complies with all applicable conservation requirements contained in sections 6-602 and 6-603 of the Industrial Chapter of the Third Management Plan as though the person was an industrial user. The person responsible for compliance shall also comply with the applicable monitoring and reporting requirements contained in section 6-203 and the conservation requirements contained in section 6-202 of the Industrial Chapter, if applicable, as though the individual user were an industrial user.*

3. *The municipal provider or individual user shall serve or use groundwater for the purpose of watering landscaping plants planted on or after January 1, 1987 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb or shoulder that is used for travel in any ordinary mode, including pedestrian travel, only if the plants are listed in Appendix 5-L. The director may waive this requirement upon request from the municipal provider or individual user if a waiver of this requirement is in the public interest. This requirement does not apply to any portion of a residential lot that extends into a publicly owned right-of-way.*

4. *The municipal provider or individual user shall not serve or use groundwater for the purpose of maintaining a water feature, including fountains, waterfalls, ponds, water courses, and other artificial water structures installed after January 1, 2002 within any publicly owned right-of-way of a highway, street, road, sidewalk, curb or shoulder that is used for travel in any ordinary mode, including pedestrian travel. The director may waive this requirement upon request from the municipal provider or individual user if a waiver of this requirement is in the public interest. This requirement does not apply to any portion of a residential lot that extends into a publicly owned right-of-way.*

B. Responsibility for Compliance with Individual User Requirements

1. A municipal provider shall be responsible for complying with an individual user requirement set forth in subsection A of this section for an existing individual user unless one of the following applies:

a. The provider identified the existing individual user to the director on a form provided by the Department and received by the director no later than 90 days before the adoption of the Third Management Plan.

b. The director gave written notice of the individual user requirement to the individual user within 30 days after the adoption of the Third Management Plan.

2. An existing individual user that has been given written notice of an individual user requirement by the director shall be responsible for complying with the individual user requirement beginning on the date specified in the notice.

3. A municipal provider shall be responsible for complying with an individual user requirement set forth in subsection A of this section for a new individual user unless one of the following applies:

a. The municipal provider identifies the new individual user to the director on a form provided by the Department. If the provider identifies the new individual user to the director within 90 days after the provider begins serving water to the new individual user, the municipal provider shall not be responsible for complying with the individual user requirement at any time. If the provider identifies the new individual user to the director more than 90 days after the provider begins serving water to the new individual user, the provider shall be responsible for complying with the individual user requirement beginning on the date the new individual user first receives water from the provider until the end of the calendar year in which the provider identifies the individual user to the director.

b. The director has given written notice of the individual user requirement to the individual user and the individual user is responsible for complying with the requirement.

4. A new individual user that has been given written notice of an individual user requirement by the director shall be responsible for complying with the individual user requirement beginning on the date specified in the notice.

C. Notification of New Individual User by Municipal Provider

Beginning January 1, 2002, and continuing thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan, a municipal provider shall notify a new individual user in writing of its individual user requirements as set forth in subsection A of this section before commencement of service of water to the individual user.

5-113. Conservation Requirements for Municipal Distribution Systems

For the calendar year 2002, or the calendar year in which the provider commences service of water, whichever is later, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan:

1. *A large municipal provider shall not operate a municipal distribution system, other than an untreated water municipal distribution system, in a manner such that lost and unaccounted for water exceeds 10 percent of the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by the large municipal provider for non-irrigation uses on an annual or three-year average basis.*
2. *A small municipal provider shall not operate its municipal distribution system, other than an untreated water municipal distribution system, in a manner such that lost and unaccounted for water exceeds 15 percent of the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by the small municipal provider for non-irrigation uses on an annual or three-year average basis.*

3. *A large untreated water provider that operates an untreated water municipal distribution system shall either:*

   a) *Line all canals within its service area that are used to deliver untreated water to its delivery points with a material that allows no more lost water than a well-maintained concrete lining, and maintain such lining to minimize its lost and unaccounted for water; or*

   b) *Operate and maintain its untreated water municipal distribution system in a manner such that lost and unaccounted for water does not exceed 10 percent of the total quantity of untreated water from any source withdrawn, diverted or received by the provider for non-irrigation uses on an annual or three-year average basis.*

5-114. Monitoring and Reporting Requirements for Municipal Providers and Individual Users

For the calendar year 2002, or for the calendar year in which the municipal provider commences service of water, whichever is later, and for each calendar year thereafter until the first compliance date for any substitute requirement in the Fourth Management Plan:

1. *A large municipal provider shall separately measure and report in its annual reports required by A.R.S. §§ 45-468 and 45-632, the total quantity of water from any source, including effluent, delivered each month for: a) irrigation uses; b) residential uses by category, including single family and multifamily; and c) non-residential uses by category, including turf-related facility uses, commercial uses, industrial uses, government uses, construction uses and other uses.*

2. *A municipal provider shall report the following in its annual report required by A.R.S. § 45-632:*

   a. *The total quantity of water from any source, disaggregated by each source, withdrawn, diverted or received by the provider for non-irrigation use during the reporting year, as separately measured with a measuring device in accordance with paragraph 7 of this subsection.*

   b. *The total quantity of water from any source, including effluent, withdrawn, diverted or received by the provider for irrigation use during the reporting year.*

   c. *The total quantity of effluent, disaggregated by direct use effluent, effluent recovered from within the area of impact, and effluent recovered outside the area of impact, served by the provider during the reporting year for non-irrigation use.*

d. *The number of single family housing units added to the provider's service area from July 1 of the previous calendar year to July 1 of the reporting year.*

e. *The number of multifamily housing units added to the provider's service area from July 1 of the previous calendar year to July 1 of the reporting year.*

f. *The total number of single family housing units and multifamily housing units served by the provider as of July 1, 2000.*

g. *The number of single family housing units and the number of multifamily housing units added to the provider's service area between July 1, 2000 and July 1 of the reporting year.*

h. *The provider's total quantity of lost and unaccounted for water during the calendar year.*

i. *The percentage of the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by the provider during the calendar year that is lost and unaccounted for water.*

3. *In addition to the information required by paragraphs 1 and 2 of this section, a large municipal provider regulated under the Non-Per Capita Conservation Program described in section 5-104 shall include the following in its annual report required by A.R.S. § 45-632:*

   a. *The information listed in the monitoring and reporting requirement sections of those RCMs set forth in Appendix 5-I that the provider agrees in writing to implement pursuant to section 5-104, subsection E, paragraph 1.*

   b. *If the provider applied for the Non-Per Capita Conservation Program under section 5-104, subsection A, paragraph 4, the information required to be submitted by the provider under the Assured Water Supply Rules adopted by the director pursuant to A.R.S. § 45-576.*

   c. *Any other information required by the director in order to determine the provider's compliance with the Non-Per Capita Conservation Program.*

4. *In addition to the information required by paragraphs 1 and 2 of this section, a large municipal provider regulated under the Alternative Conservation Program described in section 5-105 shall include in its annual report required by A.R.S. § 45-632:*

   a. *a status report describing progress in implementing the provider's programs proposed in its application, specifically including the provider's proposed conservation plan.*

   b. *The information listed in the monitoring and reporting requirement sections of those RCMs set forth in Appendix 5-I.2 and 5-1.4 that the provider agrees in writing to implement pursuant to section 5-105, subsection C, paragraph 3.*

5. *In addition to the information required by paragraphs 1 and 2 of this section, a large untreated water provider shall report in its annual report required by A.R.S. § 45-632:*

a. *The total quantity of untreated water by source, withdrawn, diverted or received by the provider during the reporting year, as separately measured with a measuring device in accordance with paragraph 7 of this section.*

b. *The number of gross acres to which the provider delivered water during the year, not including those acres regulated as a turf-related facility.*

c. *A map of the provider's service area shall be submitted with the annual report disaggregating the gross acres and the distribution system.*

d. *The provider's total quantity of lost and unaccounted for water during the calendar year.*

e. *The percentage of the total quantity of untreated water withdrawn, diverted or received by the provider during the calendar year that is lost and unaccounted for water.*

6. *A large municipal provider shall meter water deliveries to all service connections on its municipal distribution system, except connections to fire services, dwelling units in individual multifamily units, mobile homes in a mobile home park with a master meter, and construction users.*

7. *A municipal provider shall make all water use measurements using measuring devices in accordance with the Department's measuring device rules, R12-15-901, et seq., Arizona Administrative Code.*

8. *An individual user shall meet the monitoring and reporting requirements prescribed in the Industrial Chapter, if applicable, as though the individual user were an industrial user.*

5-115. Remediated Groundwater Accounting for Conservation Requirements

A. Accounting

Groundwater withdrawn pursuant to an approved remedial action project under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or Title 49, Arizona Revised Statutes, and used by a person subject to a conservation requirement established under this chapter, shall be accounted for consistent with the accounting for surface water for purposes of determining the person's compliance with the conservation requirement, subject to the provisions of subsections B through D of this section.

B. Amount of Groundwater Eligible for Accounting

For each approved remedial action project, the annual amount of groundwater that is eligible for the remediated groundwater accounting provided in subsection A of this section is the project's annual authorized volume. The annual authorized volume for a remedial action project approved on or after June 15, 1999 is the maximum annual volume of groundwater that may be withdrawn pursuant to the project, as specified in a consent decree or other document approved by the United States Environmental Protection Agency (EPA) or the Arizona Department of Environmental Quality (ADEQ). The annual authorized volume for a project approved prior to June 15, 1999 is the highest annual use of groundwater withdrawn pursuant to the project prior to January 1, 1999, except that if a consent decree or other document approved by the EPA or ADEQ specifies the maximum annual volume of

groundwater that may be withdrawn pursuant to the project, the project's annual authorized volume is the maximum annual volume of groundwater specified in that document. The director may modify the annual authorized volume for a remedial action project as follows:

1. *For an approved remedial action project associated with a treatment plant that was in operation prior to June 15, 1999, a person may request an increase in the annual authorized volume at the same time the notice is submitted pursuant to subsection C of this section. The director shall increase the annual authorized volume up to the maximum treatment capacity of the treatment plant if adequate documentation is submitted to the director demonstrating that an increase is necessary to further the purpose of the remedial action project and the increase is not in violation of the consent decree or other document approved by the EPA or ADEQ.*

2. *A person may request an increase in the annual authorized volume of an approved remedial action project at any time if it is necessary to withdraw groundwater in excess of the annual authorized volume to further the purpose of the project. The director shall increase the annual authorized volume up to the maximum volume needed to further the purpose of the project if adequate documentation justifying the increase is submitted to the director and the increase is not in violation of the consent decree or other document approved by the EPA or ADEQ.*

3. *The director shall modify the annual authorized volume of an approved remedial action project to conform to any change in the consent decree or other document approved by the EPA or ADEQ if the person desiring the modification gives the director written notice of the change within thirty days after the change. The notice shall include a copy of the legally binding agreement changing the consent decree or other document approved by the EPA or ADEQ.*

C. Notification

To qualify for the remediated groundwater accounting provided in subsection A of this section, the person desiring the accounting must notify the director in writing of the anticipated withdrawal of groundwater pursuant to an approved remedial action project under CERCLA or Title 49, Arizona Revised Statutes, prior to the withdrawal. A municipal provider may submit notice on behalf of an individual user. At the time the notice is given, the person desiring the accounting must be using remediated groundwater pursuant to the approved remedial action project or must have agreed to do so through a consent decree or other document approved by the EPA or ADEQ. The notice required by this subsection shall include all of the following:

1. *A copy of a document approved by ADEQ or the EPA, such as the Remedial Action Plan (RAP), Record of Decision (ROD) or consent decree, authorizing the remediated groundwater project. Unless expressly specified in the document, the person shall include in the notice the volume of groundwater that will be pumped annually pursuant to the project, the time period to which the document applies, and the annual authorized volume of groundwater that may be withdrawn pursuant to the project.*

2. *The purpose for which the remediated groundwater will be used.*

3. *The name and telephone number of a contact person.*

4. *Any other information required by the director*

D. Monitoring and Reporting Requirements

To qualify for the remediated groundwater accounting for conservation requirements as provided in subsection A of this section, groundwater withdrawn pursuant to the approved remedial action project must be metered separately from groundwater withdrawn in association with another groundwater withdrawal authority for the same or other end use. A person desiring the remediated groundwater accounting for conservation requirements shall indicate in its annual report under A.R.S. § 45-632 the volume of water withdrawn and used during the previous calendar year that qualifies for the accounting.

APPENDIX 5-A
MUNICIPAL PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Number	Large Provider	Large Unt. Provider	Small Provider	Status
Adaman Mutual Water Company	56-2150	X			Private Water Company
Adobe Mountain Juvenile Facility	56-2225			X	Institutional Facility
Alma Ranchettes	56-2153			X	Well Co-op
Apache Junction Water Facilities Dist.	56-2025	X			Municipality
Arcadia Vista Imp	56-2154		X	X	Private Water Company
Arcadia Water Company	57-2501		X		Irrigation District
Arctic Ice & Water	56-2156			X	Miscellaneous
Arizona Boys Ranch	56-2227			X	Institutional Facility
Arlington Farms	56-2158			X	Private Water Company
Arizona Water Co - Apache Jct.	56-2000	X			Private Water Company
Arizona Water Co - Superior	56-2001	X			Private Water Company
Arizona Water Co - White Tanks	56-2002	X			Private Water Company
City of Avondale	56-2003	X			Municipality
Beardsley Water Company	56-2159			X	Private Water Company
Berneil Water Company	56-2004	X			Private Water Company
Black Canyon Retreat Water Co	56-2287			X	Private Water Company
Brophy College Preparatory	56-2160			X	Institutional Facility
Town of Buckeye	56-2006	X			Municipality
Calle de Arcos Water Company	56-2299			X	Private Water Company
Carefree Water Company	56-2007	X			Municipality
Cave Creek Water Company	56-2008	X			Private Water Company
City of Chandler	56-2009	X			Municipality
Chandler Heights Citrus ID	56-2010		X	X	Irrigation District
Chaparral Water Company	56-2283			X	Private Water Company
Chaparral City Water Company	56-2011	X			Private Water Company
Citizens Utilities - Agua Fria	56-2012	X			Private Water Company
Citizens Utilities - Sun City	56-2038	X			Private Water Company
Citizens Utilities - Sun City West	56-2039	X			Private Water Company
Citrus Gardens Irrigation District	56-2345			X	Private Water Company
Clearwater Farms	57-2753		X		Irrigation District
Clearwater Utilities	56-2165			X	Private Water Company

APPENDIX 5-A
MUNICIPAL PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Number	Large Provider	Large Unt. Provider	Small Provider	Status
Consolidated Water Utility	56-2166			X	Private Water Company
Country Home Mobile Village Park	56-2314			X	Mobile Home Park
Crandall Water Users Association	56-2167			X	Well Co-op
Desert Hills Water Company	56-2169	X			Private Water Company
City of El Mirage	56-2016	X			Municipality
Friendly Village Mobile Home Park	56-2174			X	Mobile Home Park
Town of Gilbert	56-2017	X			Municipality
Gila Buttes Water Users Association	56-2297		X	X	Well Co-op
City of Glendale	56-2018	X			Municipality
City of Goodyear	56-2019	X			Municipality
Grandview Water Company	56-2175			X	Private Water Company
Greenfield Ranchettes	56-2241			X	Well Co-op
H2O Water Company	56-2020	X			Private Water Company
Harold Yingling	56-2224			X	Private Water Company
Hassayampa Water Co-op	56-2254			X	Well Co-op
Heartland Dairy	56-2298			X	Miscellaneous
J&M/B&K Land Investments	56-2178			X	Private Water Company
Leister Mobile Home Park	56-2182			X	Mobile Home Park
Liberty National	56-2248			X	Private Water Company
Litchfield Park Service Company	56-2021	X			Private Water Company
Luke Air Force Base	56-2022	X			Institutional Provider
MCMWD #1	57-2508		X		Irrigation District
Mar West Landowners Association	56-2184			X	Well Co-op
McCormick Ranch POA	56-2188		X	X	Well Co-op
McDowell Water Company	56-2250		X	X	Private Water Company
City of Mesa	56-2023	X			Municipality
Mobile Gardens	56-2278			X	Private Water Company
Mobile Water Company	56-2189			X	Private Water Company
Morristown Water Company	56-2324			X	Private Water Company
Nalbandian Farms	56-2191			X	Miscellaneous
New River Utility Company	56-2254			X	Private Water Company

APPENDIX 5-A
MUNICIPAL PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Number	Large Provider	Large Unt. Provider	Small Provider	Status
Olive Avenue HOA	56-2194			X	Miscellaneous
Orangewood Farms	57-2758		X		Irrigation District
Osborn Investment/Michigan MHP	56-2196			X	Mobile Home Park
Paloma Corporation	56-2197			X	Private Water Company
Paradise Valley Water Company	56-2027	X			Private Water Company
Park Shadows Country Homes	56-2028			X	Well Co-op
Pecan Tree MHP	56-2193			X	Mobile Home Park
Pecos Ranchos Association	56-2199			X	Well Co-op
Peek-A-Boo Water Coop	56-2200			X	Well Co-op
Peninsula Ditch Company	57-2514		X		Irrigation District
City of Peoria	56-2029	X			Municipality
City of Phoenix	56-2030	X			Municipality
Pima Utilities	56-2031	X			Private Water Company
Quail Hallow Water Company	56-2258			X	Private Water Company
Quail Run Irrigation Association	56-2275			X	Private Water Company
Quass Family Ranch	56-2204			X	Miscellaneous
Queen Creek Water Company	56-2032	X	X		Private Water Company
Queen Valley Domestic Improv Dist.	56-2221			X	Private Water Company
Rancho Jardines Irrigation District	57-2760		X		Irrigation District
Rigby Water Company	56-2034			X	Private Water Company
Rio Verde Utilities	56-2035	X			Private Water Company
Roosevelt Irrigation District	57-2517		X		Irrigation District
Roosevelt Water Conservation District	57-2518		X		Irrigation District
Rose Valley Water Company	56-2263	X			Private Water Company
Sabrosa Water Company	56-2209			X	Private Water Company
Saddle Mountain RV Park	56-2026			X	Mobile Home Park
Saguaro Acres Association	56-2210			X	Well Co-op
Saguaro View Management, Inc.	56-2282			X	Private Water Company
Salt River Project	57-2520		X		Irrigation District
City of Scottsdale	56-2037	X			Municipality
Shangri-La Resort	56-2319			X	Miscellaneous

APPENDIX 5-A
MUNICIPAL PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Number	Large Provider	Large Unt. Provider	Small Provider	Status
Singing Spur MHP	56-2212			X	Mobile Home Park
South Rainbow Valley Coop	56-2269			X	Well Co-op
Steve McAdams Water Company	56-2251			X	Private Water Company
Sunburst Farms East	56-2214		X	X	Private Water Company
Sunburst Farms Irrigation District	57-2523		X		Irrigation District
Sunburst Farms West	56-2215		X	X	Private Water Company
Sunrise Water Company	56-2041	X			Private Water Company
Superstition Village Limited Ptnshp.	56-2216			X	Private Water Company
Sylvia Waters	56-2228			X	Private Water Company
City of Tempe	56-2043	X			Municipality
Thunderbird Adventist Academy	56-2284		X	X	Institutional Facility
Tierra Buena Water Company	56-2339			X	Private Water Company
City of Tolleson	56-2044	X			Municipality
Tonopah Joe's Truck Stop	56-2161			X	Miscellaneous
Tonto Hills Utility Company	56-2271			X	Private Water Company
Turner Ranches Water Sewer Co.	56-2045		X	X	Private Water Company
Union Hills Auto Spa	56-2296			X	Miscellaneous
Valencia Water Company	56-2046			X	Private Water Company
Valley Utilities	56-2047	X			Private Water Company
Valley View Water Company	56-2289			X	Private Water Company
Virgil King Water Company	56-2180			X	Well Co-op
Water Utility of Greater Buckeye	56-2288			X	Private Water Company
Water Utility of Greater Tonopah	56-2276			X	Private Water Company
West End Water Company	56-2048			X	Private Water Company
Western Meadows Irrigation District	57-2525		X		Irrigation District
Wilhoit Water Company	56-2222			X	Private Water Company
Williams Gateway Airpark	56-2049	X			Miscellaneous
You and I Trailer Park	56-2280			X	Mobile Home Park

APPENDIX 5-B
LARGE UNTREATED WATER PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Large Untreated Water Provider	Provider Number	1995 Total Use (acre-feet)
Arcadia Water Co	57-2501	4,168
Arcadia Vista Improvement District	56-2154	281
Chandler Heights ID	57-2504	388
Clearwater Farms	57-2753	735
Gila Buttes Water Users	56-2297	217
McCormick Ranch POA	56-2188	490
McDowell Water Co.	56-2250	180
MCMWD#1	57-2508	229
Orangewood Farms	57-2758	193
Peninsula Ditch Co.	57-2514	1,560
Queen Creek Water Company	56-2032	67
Ranchos Jardines ID	57-2760	685
Roosevelt ID	57-2517	2,190
Roosevelt Water Conservation District	57-2518	5,147
Salt River Project	57-2520	112,913
Sunburst Farms ID	57-2523	1,404
Sunburst Farms East	56-2214	610
Sunburst Farms West	56-2215	616
Thunderbird Adventist	56-2284	244
Turner Ranches WSC	56-2045	2,563
Western Meadows ID	57-2525	338
TOTAL		**135,218**

APPENDIX 5-C.1
COMPONENT GALLONS PER CAPITA PER DAY CALCULATION - DESCRIPTION
PHOENIX ACTIVE MANAGEMENT AREA

A. Residential:

1. Existing Residential Allotment
   a. Determine Base Year 2000 Single Family Population
      Determine Base Year 2000 Multifamily Population
      Sum of Base Year 2000 Single Family and Multifamily Population
   b. Multiply Base Year 2000 Residential Population by the Existing Residential GPCD Component Requirement (Appendix 5F), multiply by 365 days and divide the product by 325,851.
   c. Result is a volumetric allotment, in acre-feet, for the Existing Residential Allotment with expected GPCD reductions included in the annual requirement calculation.
2. New Single Family and Multifamily Allotment:
   a. In Each Calendar Year Determine the following:
      New Single Family Housing Units added since June 30, 2000
      New Single Family Population (post - 2000) for the calendar year
      New Multifamily Housing Units added since June 30, 2000
      New Multifamily Population (post - 2000) for the calendar year
   b. Multiply New Single Family Housing Units and New Multifamily Housing Units by Exterior model GPHUD Rates for New Development:

Single Family	=	178 GPHUD
Multifamily	=	77 GPHUD

      Multiply the sum of the results by 365 days and divide the product by 325,851.
   c. Multiply the sum of the New Single Family Population and the New Multifamily Population by the Interior model GPCD rate of 57 for new residential development. Multiply the result by 365 days and divide the product by 325,851.
   d. The sum of the results in paragraphs b. and c. is the annual volumetric allotment in acre-feet for the New Residential Allotment.
3. Add together the Existing Residential Allotment to the New Residential Allotment to calculate the **Residential Allotment**, in acre feet for the calendar year.

B. Non-Residential:

1. Multiply the Total Population for the calendar year by the Non-Residential GPCD Requirement from Appendix 5H, multiply the result by 365 days and divide the product by 325,851.
2. The result is the volumetric **Non-Residential Allotment**, in acre-feet, for non-residential uses each calendar year.

C. Lost and Unaccounted For Water:

1. Subtract the calendar year total residential, non-residential, and system-related deliveries from the calendar year total non-irrigation water use to obtain the lost and unaccounted for water volume, in acre-feet.
2. Divide the lost and unaccounted for water volume by the total non-irrigation water use for the calendar year and multiply the result by 100.
3. If the product from D.1. is *less than* ten percent, the result is the volumetric allotment, in acre-feet, for lost and unaccounted for water for the calendar year; **or** if the product from D.1. is *greater than* ten percent, multiply the total water use for the calendar year by ten percent. The result is the volumetric **Lost and Unaccounted For Water Allotment**, in acre-feet, for the calendar year.

D. TOTAL GPCD PROGRAM COMPONENT REQUIREMENT

Sum the **Residential Allotment**, the **Non-Residential Allotment**, and the **Lost and Unaccounted For Water Allotment**, the result is the **TOTAL GPCD PROGRAM COMPONENT REQUIREMENT**, in acre-feet for the calendar year.

APPENDIX 5-C.2
COMPONENT GALLONS PER CAPITA PER DAY CALCULATION EXAMPLE
PHOENIX ACTIVE MANAGEMENT AREA

Example: The existing population is comprised of the residents served in calendar year 2000. The new population is comprised of those residents added in 2001 and after (i.e., for calendar year 2002, the new population would be the 2001 population plus those added in 2002).

1)	**EXISTING HOUSING UNITS/POPULATION**		
a.	Existing (2000) SF Housing Units	=	23,089
b.	Existing (2000) MF Housing Units	=	4,132
c.	TOTAL EXISTING RESIDENTIAL HOUSING UNITS	=	27,221
d.	Existing (2000) SF Population	=	72,554
e.	Existing (2000) MF Population	=	8,785
f.	TOTAL EXISTING RESIDENTIAL POPULATION	=	82,339
2)	**NEW HOUSING UNITS/POPULATION**		
a.	New SF Housing Units Added since June 30, 2000	=	7,717
b.	New MF Housing Units Added since June 30, 2000	=	1,381
c.	TOTAL NEW RESIDENTIAL HOUSING UNITS	=	9,098
d.	New SF Population Added since June 30, 2000	=	24,258
e.	New MF Population Added since June 30, 2000	=	2,937
f.	TOTAL NEW RESIDENTIAL POPULATION	=	27,195
3)	**COMPONENT RATES**		
a.	Existing Residential GPCD Component	=	132 (1)
b.	New Residential SF Interior GPCD Component	=	57 (2)
c.	New Residential MF Interior GPCD Component	=	57 (2)
d.	New Residential SF Exterior GPHUD Component	=	178 (2)
e.	New Residential MF Exterior GPHUD Component	=	77 (2)
f.	Non-Residential GPCD Component	=	53 (3)
4)	**COMPONENT ALLOTMENTS IN ACRE-FEET:**		
a.	Existing Residential Component = 81,339 pop x 132 GPCD x 365/325851	=	12,026 AF/YR
b.	New SF Interior Component = 24,258 pop x 57 GPCD x 365/325851	=	1,549 AF/YR
c.	New MF Interior Component = 2,937 pop x 57 GPCD x 365/325851	=	187 AF/YR
d.	New SF Exterior Component = 7,717 hu x 178 GPHUD x 365/325851	=	1,539 AF/YR
e.	New MF Exterior Component = 1,381 hu x 77 GPHUD x 365/325851	=	119 AF/YR
f.	RESIDENTIAL ALLOTMENT	=	15,420 AF/YR
g.	Non-Residential Component = 108,534 pop x 53 GPCD x 365/325851	=	6,443 AF/YR
h.	NON-RESIDENTIAL ALLOTMENT	=	6,443 AF/YR
i.	Lost/Unaccounted Water Component ≤ 10 percent of total annual use	=	2,196 (4) AF
j.	LOST/UNACCOUNTED FOR ALLOTMENT	=	2,196 AF
k.	TOTAL ALLOTMENT = Res. Component + Non-Res. Component + L/U	=	24,059 AF

AF = acre-feet

(1) The existing GPCD components are listed in Appendix 5F for each large provider. The number given here is for example purposes only.

(2) The New Single Family and Multifamily interior GPCD and exterior GPHUD components are based on the Requirements for the Phoenix AMA described in Section 5.7.1.1.

(3) The Non-Residential GPCD Component will remain constant from the Second Management Plan Final Non-Residential Requirements and are listed in Appendix 5H. The number given here is for example purposes only.

(4) Lost Water Component will vary each year depending on Total Water Use. Cannot exceed 10 percent of Total Use.

APPENDIX 5-D
1995 LARGE MUNICIPAL PROVIDERS POPULATION
1992-1996 AVERAGE WATER USE
PHOENIX ACTIVE MANAGEMENT AREA

Large Municipal Provider	1995 Service Area Population	92 - 96 Avg. Annual Use[1] (AF)	1995 Residential Use (AF)	1995 Non-Residential Use (AF)	92 - 96 Total Use[1] (GPCD)
Adaman Mutual Water Co. [2]	568	244	53	145	311
AJ Water Facilities District	7,570	943	475	322	111
City of Avondale	21,912	3,648	2,645	799	154
AWC - Apache Junction	21,954	4,975	2,623	1,884	206
AWC - Superior	3,485	449	290	120	115
AWC - White Tanks	1,987	355	290	36	160
Berneil Water Company	1,400	856	816	29	591
Town of Buckeye	4,500	980	296	176	209
Carefree Water Company	1,838	1,309	685	503	665
Cave Creek Water Company	2,532	667	313	324	276
City of Chandler	131,946	31,137	18,391	10,080	225
Chaparral City Water Co	13,728	3,984	2,325	1,149	284
Citizens Utilities: Agua Fria	8,485	1,309	610	616	176
Citizens Utilities: Sun City	42,928	13,232	9,784	2,633	273
Citizens Utilities: Sun City West	21,064	5,465	4247	695	234
Desert Hills Water Company [2]	1,418	234	154	74	171
City of El Mirage	11,030	2,101	557	300	173
Town of Gilbert	57,335	13,079	8,479	2,969	222

APPENDIX 5-D
1995 LARGE MUNICIPAL PROVIDERS POPULATION
1992-1996 AVERAGE WATER USE
PHOENIX ACTIVE MANAGEMENT AREA

Large Municipal Provider	1995 Service Area Population	92 - 96 Avg. Annual Use[1] (AF)	1995 Residential Use (AF)	1995 Non-Residential Use (AF)	92 - 96 Total Use[1] (GPCD)
City of Glendale	179,233	39,969	25,837	9,580	210
City of Goodyear	4,536	1,318	526	746	269
H2O Water Company[2]	1,311	237	218	28	167
Litchfield Park Service Co.	5,178	2,240	1,155	870	464
Luke Air Force Base	4,966	1,559	517	549	280
City of Mesa	389,761	78,134	52,261	19,871	187
Paradise Valley Water Company	8,325	8,712	5,646	2,498	904
City of Peoria	70,969	14,199	8,346	3,941	196
City of Phoenix	1,149,486	277,857	170,370	79,644	226
Pima Utilities	9,919	4,607	1,546	2,794	449
Queen Creek Water Company	3,177	1,077	585	119	308
Rio Verde Utilities	1,353	1,693	352	1,074	1165
Rose Valley Water Company[2]	760	169	186	33	258
City of Scottsdale	167,961	58,345	33,865	17,897	327
Sunrise Water Company[2]	1,520	272	223	20	169
City of Tempe	158,695	49,450	22,962	23,244	281
City of Tolleson	4,245	2,025	621	1,271	410
Valley Utilities	2,505	370	332	30	118
Williams Gateway Airpark	503	922	0	850	858

1 Includes Effluent and Spillwater
2 Transitioning from a Small Municipal Provider to a Large Municipal Provider.

APPENDIX 5-E
EXISTING RESIDENTIAL CONSERVATION POTENTIAL
LARGE MUNICIPAL PROVIDERS
PHOENIX ACTIVE MANAGEMENT AREA

Provider	Conservation Potential
Adaman Mutual Water Company	Minimum
Apache Junction Water Facilities District	No Potential
City of Avondale	Minimum
AWC - Apache Junction	No Potential
AWC - Superior	No Potential
AWC - White Tanks	Moderate
Berneil Water Company	Maximum
Town of Buckeye	Minimum
Carefree Water Company	Maximum
Cave Creek Water Company	Minimum
City of Chandler	Moderate
Chaparral City Water Company	Moderate
Citizens Utility - Agua Fria	No Potential
Citizens Utility - Sun City	Minimum
Citizens Utility - Sun City West	Minimum
Desert Hills Water Company	Minimum
City of El Mirage	Minimum
Town of Gilbert	Moderate
City of Glendale	Moderate
City of Goodyear	Minimum
H2O Water Company	Minimum
Litchfield Park Service Company	Maximum
Luke Air Force Base	Moderate
City of Mesa	Minimum
Paradise Valley Water Company	Maximum
City of Peoria	Minimum
City of Phoenix	Moderate
Pima Utilities	Minimum
Queen Creek Water Company	Moderate
Rio Verde Utilities	Minimum
Rose Valley Water Company	Maximum
City of Scottsdale	Moderate
Sunrise Water Company	Moderate
City of Tempe	Moderate
City of Tolleson	Moderate
Valley Utilities	Minimum
Williams Gateway Airpark	No Potential

APPENDIX 5-F
THIRD MANAGEMENT PLAN
EXISTING RESIDENTIAL GALLONS PER CAPITA PER DAY REQUIREMENT
PHOENIX ACTIVE MANAGEMENT AREA

Large Municipal Provider	TMP 1 (2002 - 2004)	TMP 2 (2005 - 2009)	TMP Final (2010 - 4MP)
Adaman Mutual Water Company	108	107	105
AJ Water Facilities District	100	100	100
City of Avondale	118	109	100
AWC - Apache Junction	100	100	100
AWC - Superior	100	100	100
AWC - White Tanks	136	123	111
Berneil Water Company	421	407	392
Town of Buckeye	100	100	100
Carefree Water Company	205	198	191
Cave Creek Water Company	111	109	107
City of Chandler	127	123	119
Chaparral City Water Company	140	136	133
Citizens Utilities: Agua Fria	105	103	100
Citizens Utilities: Sun City	192	184	176
Citizens Utilities: Sun City West	160	157	155
Desert Hills Water Company	102	101	100
City of El Mirage	113	107	100
Town of Gilbert	138	135	131
City of Glendale	124	121	118

APPENDIX 5-F
THIRD MANAGEMENT PLAN
EXISTING RESIDENTIAL GALLONS PER CAPITA PER DAY REQUIREMENT
PHOENIX ACTIVE MANAGEMENT AREA

Large Municipal Provider	TMP 1 (2002 - 2004)	TMP 2 (2005 - 2009)	TMP Final (2010 - 4MP)
City of Goodyear	136	118	100
H2O Water Company	100	100	100
Litchfield Park Service Co.	178	172	165
Luke Air Force Base	100	100	100
City of Mesa	130	116	103
Paradise Valley Water Co.	436	421	406
City of Peoria	130	116	102
City of Phoenix	135	129	123
Pima Utilities	133	127	122
Queen Creek Water Company	194	175	156
Rio Verde Utilities	141	139	137
Rose Valley Water Company	172	166	160
City of Scottsdale	171	166	162
Sunrise Water Company	133	129	124
City of Tempe	128	124	121
City of Tolleson	123	120	117
Valley Utilities	116	108	100
Williams Gateway Airpark	101	101	100

APPENDIX 5-G.1
EXTERIOR WATER USE MODEL FOR NEW RESIDENTIAL DEVELOPMENT
SINGLE FAMILY HOUSING UNITS
PHOENIX ACTIVE MANAGEMENT AREA

SWIMMING POOLS

Average Water Consumption

A. Evaporation[1]

1. Average January 1988 - December 1996 Reference Evapotranspiration (ETo) = 80.17 inches/year
2. Average January 1988 - December 1996 Rainfall = 9.74 inches/year
3. Average pool size = 400 square feet
4. *Calculation:*

80.17 in/yr ETo - 9.74 in/yr Rainfall	=	70.43 in/yr
70.43 in/yr / 12 inches per foot	=	5.87 ft/yr
400 sq ft pool * 5.87 ft/yr * 7.48 gal/cuft	=	**17,560 gal/yr**

B. Backwash[2]

1. Recommended backwash 2 to 4 minutes 23 times per year at 75 to 80 gallons per minute
2. *Calculation*:

2 minutes * 75 gpm * 23 times/year	=	**3,450 gal/yr**

C. Initial Fill[2]

1. Average Pool Size = 400 square feet of surface area by 5 foot depth
2. Fill averaged over the 10 year management period
3. *Calculation*:

400 sq ft * 5 ft * 7.48 gal/cuft / 10 years	=	**1496 gal/pool/yr**

D. Maintenance Refill[2]

1. Average Pool Size = 400 square feet of surface area by 5 foot depth.
2. Allow for complete refill once every 10 years - ADWR assumption
3. *Calculation*:

400 sq ft * 5 ft * 7.48 gal/cuft	=	14,960 gal/pool/yr
14,960 gal/pool/yr / 10 years	=	**1,496 gal/yr**

E. TOTAL ANNUAL DEMAND FOR NEW POOLS

1. *Calculation*:

Evaporation	=	17,560 gal/yr
Backwash	=	3,450 gal/yr
Initial Fill	=	1,496 gal/yr
Maintenance/Refill	=	1,496 gal/yr
TOTAL	=	**24,002 gal/yr**

---

1 ETo and Rainfall from Arizona Meteorological Network, Phoenix stations (www.ag.arizona.edu/AZMET)

2 Data from National Spa & Pool Institute, ADWR Phoenix AMA telephone interview, December 1995.

APPENDIX 5-G.1 *(continued)*
EXTERIOR WATER USE MODEL FOR NEW RESIDENTIAL DEVELOPMENT
SINGLE FAMILY HOUSING UNITS
PHOENIX ACTIVE MANAGEMENT AREA

SWIMMING POOLS

F. Installation Rates[3]

1. *Calculation*:

SWIMMING POOL INSTALLATION
PHOENIX ACTIVE MANAGEMENT AREA

Year	Annual # Pools Installed	Annual Housing Unit Completions	% of Total New Housing Units with a Pool
1992	5,798	13,546	43%
1993	7,323	17,296	42%
1994	9,760	21,448	46%
1995	11,063	24,102	46%
Average	**33,944**	**76,392**	**44%**

Total Annual Pool Demand = 24,002 gal/yr * 44% = **10,561 gal/yr**

G. **DEMAND PER HOUSING UNIT PER DAY**

10,561 gal/yr / 365 days = **28.93 GPHUD**

[3] Based on number of pools installed in single family residences (by city) from NSPI, Phoenix AMA, 1992 - 1995 and Housing Units Completion data from Maricopa Association of Governments, 1992 - 1995

APPENDIX 5-G.2
EXTERIOR WATER USE MODEL FOR NEW RESIDENTIAL DEVELOPMENT
SINGLE FAMILY HOUSING UNITS
PHOENIX ACTIVE MANAGEMENT AREA

EVAPORATIVE COOLING

Average Water Consumption[1]

A. Average Annual Demand[2]

1. Coolers with Bleed-Off Systems

2,906 cooling hours per season @ 8 gal/hour	=	23,462 gallons
59.02% utilize bleed-off * 23,462 gal	=	13,846 gallons

2. Coolers without Bleed-Off Systems

2,906 cooling hours per season @ 4 gal/hour	=	11,621 gallons
40.98% without bleed-off * 11,621 gal	=	4,763 gallons

3. *Calculation*:

13,846 gallons + 4,763 gallons	=	**18,609 gallons**

B. Installation[3]

1. Because these data are for *existing* housing units, the AMA has taken the data and made the following assumptions for the occurrence of evaporative cooling in ***new*** housing units:

85 percent use air conditioning only
15 percent use a combination of evaporative coolers and air conditioning
0 percent use evaporative cooling only

2. *Calculation*:

Of the 15 percent with evaporative cooling, assume use occurs during 66 percent of the cooling period = 9 percent

18,609 gallons * 9 percent per year	=	**1,675 gallons/year**

C. **DEMAND PER HOUSING UNIT PER DAY**

1. *Calculation*:

1,675 gal/yr / 365 days/yr	=	**4.59 GPHUD**

---

1 M.. Karpisak, Babcock, T., France, G., Zauderer, J., Hopf, S. and Foster, K., "Evaporative Cooler Water Use In Phoenix, Journal, Vol. 90, Issue 4 (April 1998), American Water Works Association.

2 Numbers may not total due to rounding (59.016393442623% & 40.9836065573771%).

3 City of Phoenix telephone survey, 1993.

APPENDIX 5-G.3
EXTERIOR WATER USE MODEL FOR NEW RESIDENTIAL DEVELOPMENT
SINGLE FAMILY HOUSING UNITS
PHOENIX ACTIVE MANAGEMENT AREA

LANDSCAPING

(Assumes a 7500 square foot lot)

Average Water Consumption

A. Turf

1. Turfed area of 900 square feet assumed as the average for all new housing units in the Phoenix AMA.
2. Turf application rate assumes water application at 60% of average annual reference evapotranspiration (ETo) and effective Rainfall at 50% of annual average.
3. Irrigation efficiency for residential sprinkler systems at 75%
4. *Calculation*:

900 sq ft * 3.66 af/ac * 7.48 gal/cuft	=	24,639 gallons/year
24,639 gal/yr / 75% irrigation efficiency	=	**32,987 gallons/year**

B. Trees

1. Water application based on 20% of average growing season (April - September) reference ETo and effective rainfall at 10% of growing season average
2. Assume 14 foot canopy size - requires 98 gallons per inch in June, the month with the lowest rainfall and highest ETo[1].
3. Assume 9 low water using trees
4. Assume 70% irrigation efficiency for residential drip irrigation
5. *Calculation*:

(((56.82 in/yr * 20%)-(3.71 in/yr * 10%))*98 gal/in)/52 weeks)	=	19.77 gallons/week
9 trees * 19.77 gal/wk	=	9,251.00 gallons/year
9,251 gal/yr / 70% irrigation efficiency	=	**13,215.00 gallons/year**

C. Shrubs

1. Water application based on 20% of average growing season (April - September) reference ETo and effective rainfall at 10% of growing season average
2. Assume 4 foot canopy size - requires 8 gallons per inch in June, the month with the lowest rainfall and highest ETo[1].
3. Assume 23 low water using shrubs
4. Assume 70% irrigation efficiency for residential drip irrigation
5. *Calculation*:

(((56.82 in/yr * 20%)-(3.71 in/yr * 10%))* 8 gal/in)/52 weeks)	=	1.65 gallons/week
23 shrubs * 1.65 gal/wk	=	1,970.00 gallons/year
1,970 gal/yr / 70% irrigation efficiency	=	**2,814.00 gallons/year**

D. Additional Landscaped Area

1. Water application based on 19.5% of average annual reference ETo and effective rainfall at 10% of annual average
2. Assume 500 square foot area
3. Assume 56% installation rate (only applied to housing units without pools)
4. *Calculation*:

((80.17 in/yr * 20%)-(9.74 in/yr * 10%))		
/12 inches * 500 sqft * 7.48 cuft/gal	=	4,694.00 gallons/year
4,694 gal/yr / 70% irrigation efficiency	=	6,705.00 gallons/year
6,705 gal/yr * 56% installation rate	=	**3,755.00 gallons/year**

E. **DEMAND PER HOUSING UNIT PER DAY**

1. *Calculation*:

32,987 gal/yr + 13,215 gal/yr + 2,814 gal/yr + 3,755 gal/yr	=	52,771.00 gallons/year
52,771 gal/yr / 365 days	=	**144.58 GPHUD**

---

[1] Pima County Cooperative Extension Service, Low4 Program, Landscape water Conservation Workshop materials: "How to Develop a Drip Irrigation Schedule" and "Plant Water Requirements Tucson, Arizona (adjusted for the Phoenix AMA)," unpublished.

APPENDIX 5-H
THIRD MANAGEMENT PLAN
NON-RESIDENTIAL GALLONS PER CAPITA PER DAY REQUIREMENT
PHOENIX ACTIVE MANAGEMENT AREA

Large Municipal Provider	TMP Non-Residential GPCD
Adaman Mutual Water Company	30
AJ Water Facilities District	62
City of Avondale	36
AWC - Apache Junction	34
AWC - Superior	18
AWC - White Tanks	18
Berneil Water Company	18
Town of Buckeye	47
Carefree Water Company	341
Cave Creek Water Company	45
City of Chandler	66
Chaparral City Water Company	119
Citizens Utilities: Agua Fria	19
Citizens Utilities: Sun City	50
Citizens Utilities: Sun City West	26
Desert Hills Water Company	18
City of El Mirage	39
Town of Gilbert	53
City of Glendale	52
City of Goodyear	117
H2O Water Company	18
Litchfield Park Service Co.	124
Luke Air Force Base	184
City of Mesa	51
Paradise Valley Water Co.	240
City of Peoria	45
City of Phoenix	66
Pima Utilities	287
Queen Creek Water Company	30
Rio Verde Utilities	855
Rose Valley Water Company	18
City of Scottsdale	71
Sunrise Water Company	18
City of Tempe	113
City of Tolleson	35
Valley Utilities	18
Williams Gateway Airpark	308

APPENDIX 5-I.1

RESIDENTIAL INTERIOR AND EXTERIOR STANDARD REASONABLE CONSERVATION MEASURES

WATER AUDIT AND FIXTURE RETROFIT PROGRAM FOR EXISTING RESIDENTIAL CUSTOMERS

Description: *Water provider staff or hired consultants visit residences, or resident performs self-audit, to examine water use practices, detect leaks, make recommendations for improved efficiency and install retrofit devices. Water use reduction from installation of devices depends on the life of the device, for example toilet flapper normally last about five years.*

Implementation Levels: *Minimum Conservation Potential: The provider shall notify all existing residential customers of the availability of a self-audit and retrofit kit. The provider shall distribute a kit to all customers who request one. Moderate Conservation Potential: The provider shall perform minimum level requirement, plus a minimum of 10 percent of all pre-1980 housing units shall be audited and retrofitted, free of charge to the customer, by January 1, 2010 either by the homeowner or by a trained auditor. Maximum Conservation Potential: The provider shall perform minimum level requirement, plus a minimum of 20 percent of all pre-1980 housing units shall be audited and retrofitted, free of charge to the customer, by January 1, 2010 either by the homeowner or by a trained auditor.*

The self-audit and retrofit kit shall include, at a minimum, toilet leak detection dye tabs, instructions on measuring flow from fixtures, leak repair and fixture replacement instructions, advice on behavioral changes to save water, a toilet conservation device, a low flow showerhead and faucet aerators. The audit shall include measurement of flow rates from plumbing fixtures and a check for leaks.

The housing units audited or retrofitted to meet this requirement shall not include any housing unit that was audited or retrofitted prior to acceptance into this program for the third management period unless the water use of the housing unit is inefficient.

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include a report containing information as agreed to at the time of acceptance into the Non-Per Capita Conservation Program sufficient to assess program effectiveness, including information on the method(s) used to contact customers, the annual number of audits and retrofits performed and self-audit kits sent out, and an estimate of the number and volume of leaks found and repaired.*

ORDINANCE OR CONDITION OF NEW SERVICE PROHIBITING INSTALLATION OR REPLACEMENT OF PLUMBING FIXTURES IN RESIDENTIAL HOUSING UNITS UNLESS FIXTURES MEET WATER SAVING STANDARDS

Description: *The provider adopts an ordinance or establishes conditions of new service prohibiting the installation of plumbing fixtures in new residential housing units and the replacement of plumbing fixtures in existing residential housing units unless the fixtures meet water efficiency standards. Plumbing fixtures to be covered and their respective maximum use rates are as follows:*

- *Faucets-kitchen and lavatory* *3.0 gpm*
- *Replacement aerators - kitchen and lavatory* *3.0 gpm*
- *Metering faucets* *.25 gpc*
- *Toilets* *1.6 gpf*
- *Showerheads* *3.0 gpm*
- *Evaporative cooling systems/Decorative fountains must be equipped with water recycling or reuse systems*

Waivers may be available for unusual circumstances (e.g., historic buildings or areas where sanitation or health codes may conflict).

Implementation: *The provider shall adopt and enforce a plumbing ordinance or establish conditions of new service prohibiting the installation of plumbing fixtures in new housing units and the replacement of plumbing fixtures in existing housing units unless the fixtures meet the water savings performance standards outlined in the description above. Implementation of this RCM shall include a proactive inspection and enforcement program that ensures compliance with the applicable ordinance or conditions of service.*

Monitoring/Reporting: *The annual report required by A.R.S. § 45-632 shall include a copy of the current local plumbing ordinance or sample conditions of new service agreement that meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the ordinance or agreement.*

In addition, the provider shall include in the annual report evidence of implementation of the applicable ordinance or conditions of service by reporting the number of certificates of occupancy issued in the service area, the number of permits issued for the replacement of plumbing fixtures in existing housing units, the number of housing units inspected, the number and type of plumbing fixture violations and any enforcement action taken.

A provider that is not a city or town shall also collect and examine all inspection records for new permits issued by governmental entities for the installation of original plumbing fixtures in new housing units and the replacement of plumbing fixtures in existing housing units within the provider's service area and report any plumbing code or plumbing ordinance violations that have not been enforced to the governing body of the entity charged with enforcing the code or ordinance.

Note: This documentation will be used to evaluate the effectiveness of the RCM. It will not be used to require any modification of the negotiated non-per capita conservation program agreement.

AUDIT PROGRAM FOR EXISTING RESIDENTIAL CUSTOMERS

Description: *Trained auditors visit residences to examine outdoor water use practices, or materials are supplied for a self-audit of outdoor water use practices. Areas of emphasis are irrigation scheduling advice, sprinkler and drip systems inspection, evaporative cooler inspection, information on improving water retaining capacity of the soil, information on Xeriscape™ concepts and swimming pool maintenance and evaporation control (i.e., pool covers). This program shall be designed to target those customers with the greatest conservation potential.*

Implementation Levels: *Minimum Conservation Potential: The provider shall notify all existing residential customers of the availability of an exterior water use self-audit packet. The packet shall include at a minimum information on checking irrigation systems for efficiency and leaks, information on checking evaporative coolers for efficiency and leaks, irrigation schedules, and information on Xeriscape™. The provider shall distribute a packet to all customers who request one. Moderate Conservation Potential: The provider shall implement the minimum level program plus 5 percent of total housing units in existence when the provider is accepted into this program shall be audited either by the homeowner or a trained auditor free of charge to the customer. Audits shall be completed by January 1, 2010. Maximum Conservation Potential: The provider shall implement the minimum level program plus 10 percent of total housing units in existence when the provider is accepted into this program shall be audited either by the homeowner or a trained auditor free of charge to the customer. The audits shall be completed by January 1, 2010.*

For both the moderate and maximum levels of implementation, the ratio of audited multifamily housing units to audited single family housing units shall be no greater than the ratio of total multifamily housing units to total single family housing units in the entire service area.

The housing units audited to meet this requirement shall not include any housing unit that was audited prior to acceptance into this program for the third management period unless the water use of the housing unit is inefficient.

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include a report on the number of housing units audited, plus a follow-up survey of a statistically significant sample of those audited, as agreed to by the director, to determine if audited customers have implemented any changes in exterior use habits, irrigation system, or landscaping.*

LANDSCAPE WATERING ADVICE PROGRAM FOR EXISTING AND NEW RESIDENTIAL CUSTOMERS

Description: *Landscape watering advice helps existing and new homeowners to irrigate efficiently. The components of a landscape watering advice program may include guidelines for irrigation scheduling based on time of day or season and dissemination of weather-based watering information (e.g.: ET rate based on solar radiation, temperature, rainfall and relative humidity). Programs that encourage watering only every other day and only at certain times of day have also been shown to save water.*

Implementation Levels: *Minimum Conservation Potential: The provider shall notify all existing and new residential customers of the availability of information from the provider regarding the general benefits of efficient landscape watering including water and cost savings. This notification shall be through water bill inserts printed directly on bills in a prominent manner, or some other mechanism approved by the director. The provider shall distribute the landscape watering information to all customers who request it. Moderate Conservation Potential: The provider shall mail the landscape watering information to all existing and new residential customers or make it available to the customers at local distribution centers such as schools, libraries, plant nurseries, or model homes and notify all residential customers of the location of the information. Maximum Conservation Potential: The provider shall implement the moderate level programs plus hold workshops on landscape irrigation and/or have a landscape advisor available for telephone advice to customers and/or develop a conservation goal-billing program designed to assist residential customers determine the requirements for landscape water use. The provider shall hold at least one workshop annually for every 100,000 persons in the provider's service area. If there are less than 100,000 persons, the provider shall hold one workshop annually. If the telephone advice option is chosen, the provider shall publicize the telephone number at least once quarterly.*

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include a report on the methods used to contact customers, the number of pamphlets/brochures distributed, the number of workshops conducted, and the number of phone calls taken to give landscape irrigation advice.*

ORDINANCE OR CONDITION OF NEW SERVICE FOR MODEL HOMES IN NEW RESIDENTIAL DEVELOPMENTS

Description: *Model homes in new developments are required to use low water use landscaping in front yards to set the tone for landscaping by homeowners. This measure helps to educate home buyers about the possibilities of appropriate landscaping for the area. Provision of information on low water use landscaping and/or landscape packages offered to new home buyers reinforces the message.*

Implementation: *The provider shall adopt and enforce an ordinance or establish conditions of new service requiring that new model homes meet water efficient standards. These include limitation of water-intensive landscaping to 20 percent of landscapable area, location of such landscaping where it is functionally useful, use of low water use plants from the Department's Low Water Use/Drought Tolerant Plant List (Appendix 5-L) in the remaining area, and use of efficient irrigation systems in all areas. Information on low water use landscaping and/or landscape packages with low water use landscaping shall be made available and displayed in a prominent manner at the model home site. For purposes of this RCM, the term "water-intensive landscaped area" means an area of land that is watered with a permanent water application system and planted primarily with plants not listed in Appendix 5-L (Low Water Use/Drought Tolerant Plant List), or any modifications to the list, and the total surface area of all water features (including swimming pools of any size, fountains, ponds, water courses, waterfalls, and other artificial water structures) filled or refilled with water from any source.*

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include a copy of the ordinance or sample conditions of new service agreement used to meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the ordinance or agreement. Each calendar year the provider shall submit a report on the number and location of model homes built during the reporting year.*

In addition to the annual reporting requirements, the provider shall maintain and submit to the Department upon request a copy of the landscape packages or landscape information provided by each developer to new home buyers.

PROHIBIT THE CREATION OF NEW COVENANTS, CONDITIONS AND RESTRICTIONS WHICH REQUIRE THE USE OF WATER-INTENSIVE LANDSCAPING OR WHICH PROHIBIT THE USE OF LOW WATER USE LANDSCAPING IN NEW RESIDENTIAL DEVELOPMENTS

Description: *In an effort to promote and facilitate installation of water conserving landscaping, the provider refuses to serve water to new subdivisions that have covenants, conditions and restrictions that require the use of water-intensive landscaping or prohibit low water use landscaping. This would not prohibit water-intensive landscaping, but would allow homeowners to install the landscaping of their choice.*

Implementation: *The provider shall adopt and enforce an ordinance or establish conditions of new service requiring that developers of new subdivisions neither forbid low water use landscaping nor require water-intensive landscaping through covenants, conditions and restrictions.*

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include a copy of the ordinance or sample conditions of new service agreement used to meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the ordinance or agreement.*

RESIDENTIAL EXTERIOR
STANDARD RCM CHOICE (1 OF 3)

ORDINANCE OR CONDITIONS OF NEW SERVICE LIMITING USE OF TURF AND OTHER WATER-INTENSIVE LANDSCAPING IN NEW MULTIFAMILY DEVELOPMENTS

Description: *The provider adopts an ordinance or establishes conditions of new service that limits and set criteria for water-intensive landscaping in multifamily developments.*

Implementation: *The provider shall adopt and enforce and ordinance or establish conditions of new service requiring that new multifamily developments meet water conserving landscaping standards, including limitation of water-intensive landscaping to individual patio areas and those areas used for active recreational purposes, and prohibiting water-intensive landscaping in all other areas, including common areas not used for active recreational purposes. In addition, the ordinance or conditions of new service shall require the use of efficient irrigation systems.* ***This RCM can be chosen only by providers with significant conservation potential in the new multifamily sector.***

STANDARD RCM CHOICE (2 OF 3)

ORDINANCE OR CONDITION OF NEW SERVICE LIMITING USE OF TURF AND OTHER WATER-INTENSIVE LANDSCAPING IN COMMON AREAS OF NEW SINGLE FAMILY AND MULTIFAMILY DEVELOPMENTS

Description: *The provider adopts an ordinance or establishes conditions of new service that limits turf and other water-intensive landscaping within common areas of new single family and multifamily developments.*

Implementation: *The provider shall adopt and enforce an ordinance or establish conditions of new service requiring that water-intensive landscaping within all common areas of new housing developments not exceed 10 percent of the total landscapable area of the common area. Those areas used for active recreational purposes shall not be included in calculating the common area.*

STANDARD RCM CHOICE (3 OF 3)

REBATE PROGRAM FOR NEW RESIDENTIAL CUSTOMERS

Description: *A rebate is offered for new landscapes that are designed to be efficient in water use. The landscapes may be required to meet pre-established design, plant selection, installation and maintenance standards.*

Implementation: *The provider shall offer all new residential customers a rebate for installing low water use landscaping. The rebate shall be in the form of cash, a reduction in water bills, or a waiver or rebate of the development (hookup) fee.*

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include the number of rebates given, the amount of money distributed to participating customers and an estimate of water savings for the reporting year.*

APPENDIX 5-I.2

NON-RESIDENTIAL INTERIOR AND EXTERIOR STANDARD REASONABLE CONSERVATION MEASURES

INTERIOR AUDIT PROGRAM FOR EXISTING FACILITIES

***Description**: The provider offers audits conducted by trained personnel or instructions for a self-audit to existing non-residential customers (excluding turf-related facilities, large scale cooling facilities, and landscaped public rights-of-way). These audits will be designed to include personal sanitation, cooling, and process water use as applicable for each facility. Audits for personal sanitation include visual leak detection, water budget analysis, recommendations for improved water use efficiency, staff education, and a retrofit analysis; cooling audits include education to determine system conductivity, maintenance practices, system operation, and design characteristics. Process water uses are audited where conservation potential exists. After the audit has been conducted the facility compiles information into a post-audit report to be submitted to the provider. Provider staff reviews and makes recommendations to improve water usage at the facility.*

***Implementation:** The provider shall notify all existing non-residential customers (excluding turf-related facilities, large scale cooling facilities and landscaped public rights-of-way) of the availability of an audit performed on-site free of charge by staff or hired consultants, or a self-audit packet that at a minimum shall include information on how to conduct a self-audit and complete a post-audit report to be returned to the provider. The provider shall evaluate each analysis and make recommendations to the facility for water conservation potential. Existing non-residential customers that collectively receive at least 20 percent of the total non-residential water use in the provider's service area (excluding turf-related facilities, large scale cooling facilities, and landscaped public rights-of-way) shall be audited either by the non-residential customer or by trained personnel. The measurement of 20 percent of non-residential use shall be based on the most current water use records available when the provider enters the program. Annual progress requirements will be negotiated between the Department and the provider with the provider required to complete all the necessary audits by January 1, 2010.* ***This RCM shall be implemented in conjunction with the Exterior Audit for Existing Facilities**.*

***Monitoring/Reporting:** The Annual Report required by A.R.S. § 45-632 shall include the number of facilities audited by the provider and the number of facilities that conducted a self-audit and returned a post-audit report to the provider within the reporting year. The annual report shall include the name and type of facility audited and its annual water use for the previous year. The provider shall maintain and make available for the Department's inspection the name, address, phone number, contact person, and audit report for each facility audited.*

In addition to the annual reporting requirements, the provider shall collect, maintain and submit to the Department upon request information on selected facilities that utilize this program in order to allow an effective evaluation of the program. The number of records and type of data to be maintained will be determined at the time the provider enters the program. Note: This evaluation will be used to improve effectiveness of RCMs. It will not be used to require any modification of the negotiated Non-Per Capita Conservation Program agreement.

ORDINANCE OR CONDITION OF NEW SERVICE PROHIBITING INSTALLATION OR REPLACEMENT OF PLUMBING FIXTURES IN NON-RESIDENTIAL FACILITIES UNLESS FIXTURES MEET WATER SAVING STANDARDS

Description: *Provider adopts an ordinance or establishes conditions of new service prohibiting the installation of plumbing fixtures in new non-residential facilities and the replacement of plumbing fixtures in existing non-residential facilities unless the fixtures meet water efficiency standards. Plumbing fixtures to be covered and their respective maximum use rates are as the follows:*

- *Faucets-kitchen and lavatory* *3.0 gpm*
- *Replacement aerators - kitchen and lavatory* *3.0 gpm*
- *Metering faucets* *.25 gpc*
- *Gravity tank-type and flushometer toilets* *1.6 gpf*
- *Electromechanical hydraulic toilets* *1.6 gpf*
- *Blowout toilets* *1.6 gpf*
- *Showerheads* *3.0 gpm*
- *Urinals* *1.0 gpm*
  (automatic, timed, and self-flushing urinals are prohibited)
- *Evaporative cooling systems/Decorative fountains must be equipped with water recycling or reuse systems*

Waivers may be available for unusual circumstances (e.g., hospitals and other areas where sanitation or health codes may conflict).

Implementation: *The provider shall adopt and enforce a plumbing ordinance or establish conditions of new service prohibiting the installation of plumbing fixtures in new non-residential facilities and the replacement fixtures in existing non-residential facilities unless the fixtures meet the water savings performance standards outlined in the description above. Implementation of this RCM shall include a proactive inspection and enforcement program that ensures compliance with the applicable ordinance or conditions of service.*

Monitoring/Reporting: *The annual report required by A.R.S. § 45-632 shall include a copy of the current local plumbing ordinance or sample conditions of new service agreement that meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the ordinance or agreement.*

In addition, the provider shall include in the annual report evidence of implementation of the applicable ordinance or conditions of service by reporting the number of certificates of occupancy issued in the service area, the number of permits issued for the replacement of plumbing fixtures in existing non-residential facilities, the number of non-residential facilities inspected, the number and type of plumbing fixture violations and any enforcement action taken.

A provider that is not a city or town shall also collect and examine all inspection records for new permits issued by governmental entities for the installation of original plumbing fixtures in new facilities and the replacement of plumbing fixtures in existing non-residential facilities within the provider's service area and report any plumbing code or plumbing ordinance violations that have not been enforced to the governing body of the entity charged with enforcing the code or ordinance.

Note: This documentation will be used to evaluate the effectiveness of the RCM. It will not be used to require any modification of the negotiated non-per capita conservation program agreement.

1

DISTRIBUTION OF CONSERVATION INFORMATION TO ALL NEW NON-RESIDENTIAL CUSTOMERS AND SUBMITTAL OF WATER USE PLAN BY NEW LARGE FACILITIES

Description: *Provider distributes a conservation packet to all new non-residential customers when an application is submitted for a building permit. The conservation packet includes educational material on the best commercially available technologies, current codes affecting water use at each facility, and a standard form approved by the Department to be filled out by the new customer. This form will function as the water use plan to be submitted by all new non-residential customers who may potentially use 10 acre-feet or more of water annually. Turf-related facilities, large scale cooling facilities, and new large produce processing facilities are excluded from the requirement to submit a water use plan as they are required in the Industrial Conservation Program to submit a water conservation plan. Utilization of the plan helps increase the awareness of best available technologies as they become available within each industry.*

The water use plan shall identify all water uses anticipated by the user and the water conservation measures to be utilized. The water use plan shall include at least the following information (where applicable):

- *Water conservation education/training for employees*
- *Use of alternative water sources (i.e., CAP, effluent, remediated groundwater, or other non-groundwater sources)*
- *Operating TDS or conductivity for cooling towers and total cooling capacity*
- *Use of best available technologies in accordance with existing process uses (i.e., recirculating systems for process water, alternative dust control methods, automatic shut-down devices to eliminate continual running of water)*
- *Any plans for the reuse of wastewater or process water at the facility*
- *Type of landscaping and irrigation system*

Implementation: *The provider shall distribute a conservation packet as described above to all new non-residential customers prior to construction when an application is submitted for a building permit (private water companies shall distribute a conservation packet when contacted for new service). As a condition of new service, those non-residential customers who will potentially use 10 acre-feet or more of water annually, excluding turf-related facilities, large scale cooling facilities, and new large produce processing facilities, shall be required to submit a water use plan as outlined in the description above to be reviewed by water provider staff. The Department will supply to the provider the necessary form and guidelines to complete the water use plan at the time the provider enters this program. Where necessary, provider staff shall make recommendations for efficient use of water to the new user.*

Monitoring/Reporting:
The Annual Report required by A.R.S. § 45-632 shall include a copy of the sample conditions of new service agreement used to meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the agreement. The provider shall also include in the annual report the number of conservation packets distributed annually and the number of water use plans received during the reporting year.

In addition to the annual reporting requirements, the provider shall maintain and submit to the Department upon request the water use plans submitted by non-residential customers.

NON-RESIDENTIAL EXTERIOR
STANDARD RCM

EXTERIOR AUDIT PROGRAM FOR EXISTING NON-RESIDENTIAL CUSTOMERS

***Description**: Trained auditors visit existing non-residential customers (excluding turf-related facilities, large scale cooling facilities, and landscaped public rights-of-way) to examine outdoor water use practices, or materials are supplied for a self-audit of outdoor water use practices. These audits are designed for landscape water use and include a survey of water use practices or scheduling, a visual leak detection analysis, examination of the current irrigation system maintenance and efficiency, and an examination of existing employee education or training. After the audit has been conducted the facility compiles information into a post-audit report to be submitted to the provider. Provider staff reviews and makes recommendations to improve water usage at the facility.*

Implementation:** The provider shall notify all existing non-residential customers (excluding turf-related facilities, large scale cooling facilities, and public rights-of-way) of the availability of an audit performed on-site free of charge by staff or hired consultants, or a self-audit packet that shall include at a minimum information on how to conduct a self-audit and complete a post-audit report to be returned to the provider. The provider shall evaluate each post-audit report and make recommendations to the facility for water conservation potential. Existing non-residential customers that collectively receive at least 20 percent of the total non-residential water use in the provider's service area (excluding turf-related facilities, large scale cooling facilities, and landscaped public rights-of-way) shall be audited either by the non-residential customer or by a trained auditor. The measurement of 20 percent of non-residential use shall be based on the most current water use records available when the provider enters the program. Annual progress requirements will be negotiated between the Department and the provider with the provider required to complete all the necessary audits by January 1, 2010.* ***This RCM shall be implemented in conjunction with the Interior Audit for Existing Facilities.

***Monitoring/Reporting:** The Annual Report required by A.R.S. § 45-632 shall include the number of facilities audited by provider and the number of facilities who conducted a self-audit and returned an post-audit report to the provider within the reporting year. The annual report shall include the name and type of facility audited and its annual water use for the previous year. The provider shall maintain and make available for the Department's inspection the name, address, phone number, contact person, and audit report for each facility audited.*

In addition to the annual reporting requirements, the provider shall collect and maintain information on selected facilities that utilize this program in order to make an effective evaluation of the program. The number of records and type of data to be maintained will be determined at the time the provider enters the program. Note: This evaluation will be used to improve effectiveness of RCMs. It will not be used to require any modification of the negotiated Non-Per Capita Conservation Program agreement.

LANDSCAPE ORDINANCE OR CONDITION OF NEW SERVICE FOR NEW FACILITIES

Description: *Provider requires new non-residential customers to limit water-intensive landscaping, install efficient irrigation systems, and limit water features/fountains.*

Implementation: *The provider shall adopt and enforce an ordinance or establish conditions of new service requiring new non-residential customers with greater than or equal to 10,000 square feet of landscapable area to comply with the following, as applicable: (1) If the new non-residential customer is not a hotel or motel, the water-intensive landscaped area within the facility shall not exceed an area calculated by adding 10,000 square feet plus 20 percent of the facility's landscapable area in excess of 10,000 square feet. Schools, parks, cemeteries, golf courses, common areas of housing developments, and public recreational facilities with water-intensive landscaping greater than or equal to 10 acres are exempt from this provision, as they are regulated under the individual user requirements; (2) If the new non-residential customer is a hotel or motel, the water-intensive landscaped area within the facility shall not exceed an area calculated by adding 20,000 square feet plus 20 percent of the facility's landscapable area in excess of 20,000 square feet; (3) Only efficient irrigation systems shall be used; and (4) The use of water features and/or fountains shall be limited and shall be equipped with water recycling or reuse systems.*

Monitoring/Reporting: *The Annual Report required by A.R.S. § 45-632 shall include a copy of the ordinance or sample conditions of new service agreement used to meet the implementation requirements for this RCM. This shall be submitted one time only (the first year of compliance with the Non-Per Capita Conservation Program) unless there is an amendment to the ordinance or agreement.*

APPENDIX 5-I.3

EDUCATION
STANDARD
REASONABLE CONSERVATION MEASURES

PUBLIC INFORMATION AND EDUCATION PROGRAM

Description: *Educating customers about the need for water conservation is essential to the success of any conservation program. There are many ways to educate and inform the public, including the distribution of information packets, brochures, pamphlets, bill inserts, newsletters, fact sheets, calendars, "tents" in restaurants, conducting "workshops," and radio and TV public service announcements. Another method is the provision of information that allows customers to compare their current water use with the amount of water they used during the preceding billing period and the same billing period in the previous year. Water use tracking information may be effective because it is personalized and is updated and repeated with every billing cycle. Printed materials and public service announcements can be effective for many months to the extent that they are heard, seen or read and acted upon.*

Implementation: *A minimum of once a year, the provider shall supply all customers with information on the following, using methods agreed to at the time of acceptance into the Non-Per Capita Conservation Program: 1) the significance and relevance of water conservation, and methods of conserving water, including information about conservation devices and behavioral changes that save water; and 2) how to participate in other conservation programs offered by the provider under the Non-Per Capita Conservation Program (e.g., audits, rebates, workshops). The provider shall also develop and distribute with every billing, conservation billing in either graphical or numerical format (i.e., graphs or numbers) showing current water use, the amount of water used during the preceding billing period and the same billing period in the previous year.*

Monitoring and Reporting Requirements: *The Annual Report required by A.R.S. § 45-632 shall include examples of the materials provided, a report on the methods used to contact customers, and the number of materials distributed in any form.*

APPENDIX 5-I.4

SUBSTITUTE
REASONABLE CONSERVATION MEASURES

SUBSTITUTE RCM LIST

The Substitute RCM List for the Phoenix AMA is filed in the Department's Phoenix AMA office. A copy of the list effective as of the date of this plan follows in this Appendix. Since the list may be amended in the manner described below, a current list is available upon request from the Phoenix AMA office.

PROCEDURE FOR MODIFICATION OF SUBSTITUTE RCM LIST

1. *A municipal provider who seeks to add an RCM to the Substitute RCM List for the Phoenix AMA may apply at any time to the director for a modification of the list. The application shall be made on a form prescribed and furnished by the director.*

2. *The director shall review each request for a modification of the Substitute RCM List. The director may request additional information from the applicant and may seek information from other sources as may be necessary to determine whether the list should be modified.*

3. *If the director approves the addition of an RCM to the Substitute RCM List, the director shall place the RCM on a supplemental list that shall be considered an addendum to the Substitute RCM List. The supplemental list shall be available upon request from the Phoenix AMA office.*

4. *The director may add an RCM to the Substitute RCM List for the Phoenix AMA on the director's own initiative if the director determines that implementation of the RCM, either by itself or in combination with one or more other RCMs on the Substitute RCM List, will result in a water use efficiency for the applicable water use category equivalent to the efficiency that would result from implementation of one or more of the required RCMs for that water use category.*

SUBSTITUTE REASONABLE CONSERVATION MEASURES

RCM	*Description*	*Implementation*
	Residential Interior	
Low Flow Plumbing Rebate Program for Existing Residential Customers	*Provider grants a financial rebate to residential homeowners who elect to replace existing high water use toilets, showerheads and faucets with low-flow devices, consistent with the AWEPA.*	*Negotiated and Approved by the director*
Toilet Leak Detection & Repair Program for Existing Residential Customers	*Provider supplies non-toxic dye tablets and instructions to conduct a toilet leak detection analysis and suggestions for leak repairs.*	*Negotiated and Approved by the director*
Landscape Retrofit Program for Existing Residential Customers	*Provider grants financial incentives, including rebates, to existing customers for conversion of existing high water use landscapes to low water use landscapes. Provider supplies examples of landscape plans, plant lists, irrigation methods, and information on soil amendments and preparation.*	*Negotiated and Approved by the director*
	Residential Exterior	
Effluent Reuse - Recycled Wastewater for Existing or New Residential Customers	*Provider develops an effluent reuse system for existing or new housing developments and provides incentives for the reuse of effluent at facilities capable of utilizing the resource.*	*Negotiated and Approved by the director*
Low Water Use Ordinance or Condition of New Service for New Residential Customers	*Provider develops conditions of new service or ordinances that limit turf and other water-intensive landscaping in all new developments consistent with the new single family and multifamily residential exterior water use models in the Third Management Plan for the provider's AMA.*	*Negotiated and Approved by the director*
	Non-Residential Interior	
Retrofit Distribution or Rebate Program	*Provider supplies retrofit kits or provides rebates to non-residential facilities that elect to retrofit existing high water using plumbing fixtures to low water using fixtures consistent with the AWEPA.*	*Negotiated and Approved by the director*
Process Water Conservation Program for New or Existing Facilities	*Provider develops a program that identifies the non-residential customers within the provider's service area with the greatest conservation potential and assigns conservation measures aimed at reducing water use in these facilities.*	*Negotiated and Approved by the director*

SUBSTITUTE REASONABLE CONSERVATION MEASURES

RCM	*Description*	*Implementation*
	Non-Residential Exterior	
Rebate Program for Low Water Use Landscaping & Irrigation System Improvements for Existing or New Facilities	*Provider offers financial incentives (e.g., rebates, reduced rates, wholesale prices on plant materials, or financing packages) to non-residential facilities to replace existing landscaping and irrigation system or installation of new landscaping or irrigation systems with low water use landscaping and efficient irrigation technologies.*	*Negotiated and Approved by the director*
Effluent and Wastewater Use Incentives for Existing and New Facilities	*Provider offers incentives for conversion of existing irrigation systems or installation of new irrigation systems capable of utilizing effluent or wastewater (includes all water discharged after an industrial or commercial use, excluding effluent) for landscape watering.*	*Negotiated and Approved by the director*
Ordinance or Condition of Service Requiring The Use of Effluent for New Public Recreation Facilities	*The provider adopts an ordinance or condition of service requiring the use of effluent in new public recreation facilities, including turf-related facilities and other facilities with a water-intensive landscaped area of 10 or more acres. The ordinance or condition of new service shall require the owner of the facility to demonstrate to the Department that the facility will be designed and operated in a manner that conserves water. Publicly owned rights-of-way are exempt from this requirement. For purposes of this RCM, "turf-related facility" and "water-intensive landscaped area" have the meanings prescribed by section 6-301 of Chapter 6.*	*Negotiated and Approved by the director*
	Education	
Training Opportunities	*Provider offers ongoing seminars, workshops, lectures, and videos to promote water conservation to residential or non-residential customers, employees, educators, or professional interest groups. Topics could include landscape design and maintenance, interior water conservation methods, or general background information on regional water supply issues.*	*Negotiated and Approved by the director.*
Youth Programs	*Provider assists local school district(s) to provide water conservation and water supply information to students. Assistance can include classroom presentations, teacher education programs, curriculum, and field trips to water-related facilities.*	*Negotiated and Approved by the director.*

SUBSTITUTE REASONABLE CONSERVATION MEASURES

RCM	*Description*	*Implementation*
	Education	
Demonstration Sites and Exhibits	*Provider establishes, maintains, and promotes facilities, sites, and exhibits that demonstrate water conservation including demonstration gardens, demonstration homes, conservation exhibits, and public activities.*	*Negotiated and Approved by the director.*
Media-Related Outreach	*Provider develops a media-outreach program focused on water conservation including news articles, features, and series, magazine stories, radio and television public service announcements, and television specials. Additionally, novelty items to promote local or regional conservation efforts can be distributed including buttons, posters, and bumper stickers.*	*Negotiated and Approved by the director. Must include a method to evaluate effectiveness and market penetration.*
	System-Related Measures	
Water Audit Program	*Provider has an audit conducted by a trained auditor of the distribution system, accuracy of the water agency records, and systems control equipment. The audit should identify, quantify, and verify water and revenue losses to allow the provider to select and implement programs to reduce water and revenue losses. Such examination should be performed annually to update the results of earlier audits. The audit must include an analysis of the water audit results and possible corrective measures including resulting costs, feasibility, and savings.*	*Negotiated and Approved by the director.*
Leak Detection Program	*Provider implements a leak detection program in conjunction with a water audit (see substitute RCM - Water Audit). The leak detection program must address losses due to leaks, unauthorized use (street, sewer, and fire departments), water department maintenance, and meter under-registration and must include repair, maintenance, and meter testing. Flushing frequency and exercise of valves should also be accounted for.*	*Negotiated and Approved by the director.*

SUBSTITUTE REASONABLE CONSERVATION MEASURES

RCM	*Description*	*Implementation*
Conservation-Based Rate Structure	*Provider develops a water rate structure that results in slowing the increase in water consumption that traditionally accompanies increases in population and per capita income. Pricing structures that may result in conservation are: increasing block rate, lifeline rate, seasonal rate, and excess demand surcharge. To be effective, the rate structure must clearly send a conservation message. The rate structure established should ensure that customers receive the proper signal that allows them to make a choice as to whether or not to implement conservation measures. Additionally, the water rate revision should be accompanied by a public awareness campaign, a water conservation device distribution program, pamphlets on low water use landscaping, or other conservation measures to increase the effectiveness of the program..*	*Negotiated and Approved by the director.*
	System-Related Measures	
Conservation Coordinator	*Provider employs a staff person whose sole responsibility is to ensure the implementation of effective water conservation programs. The employee would act to coordinate conservation efforts in conjunction with utility staff and be the primary contact for the public regarding conservation information. The coordinator could initiate an information campaign including: pamphlets, fact sheets, bill stuffers, public service announcements, and press releases. The coordinator can also coordinate direct conservation activities other than education.*	*Negotiated and Approved by the director. Includes submittal of a complete job description for the position as well as annual goals and objectives for the program.*
Water Tampering and Water Waste	*Provider adopts and enforces ordinances or implements policies regarding excessive and wasteful use of water. Meter reading staff and customers report water theft where ordinances are not applicable. Staff performs regular checks of water delivered and water used in distinct parts of the service areas where there is greater susceptibility to water theft.*	*Negotiated and Approved by the director.*

APPENDIX 5-J
INDIVIDUAL INCIDENTAL RECHARGE FACTOR CALCULATION
PHOENIX ACTIVE MANAGEMENT AREA

Hydrologic Studies
The following information must be provided:

1. A copy of a hydrological study that demonstrates the amount of water supplied by the municipal provider for use within its service area during each of the preceding five years (prior to application to the Non-Per Capita Conservation Program) and the amount of incidental recharge as calculated below that occurred within the municipal provider's service area during each of those years.

2. A copy of a hydrological study that projects the average annual amount of water that the municipal provider will supply for use within its service area during the management period and the average annual amount of incidental recharge as calculated below that will occur within the municipal provider's service area during the management period.

Calculation of the Incidental Recharge and an Incidental Recharge Factor
The following information should be included in the hydrologic studies:

1. A map showing:
   a. Service area boundary.
   b. Location of turfed areas and/or unlined lakes greater than 10 acres where water is provided by the municipal provider applying for the Non-Per Capita Conservation Program.
   c. Location of areas that are served by septic systems.

2. For turfed and water acres:
   a. Combined actual turfed and water acres (of facilities greater than or equal to 10 acres).
   b. Plant consumptive use (actual or using consumptive use rate published in the Second Management Plan), or measured evaporation rates.
   c. Total annual volume of water applied to facility. If only a portion of the water used is supplied by the municipal provider, document the percentage supplied by the provider who is applying for the Non-Per Capita Conservation Program and from other sources.

3. For septic systems:
   a. The number of acres of lots served by septic systems and the number of septic tanks per acre.
   b. Volume of water supplied to that system and documentation of the volume of water incidentally recharged. If only a portion of the water used is supplied by the municipal provider, document the percentage supplied by the provider and from other sources.

4. Total annual volume of water supplied by a provider for use within its service area.

5. Any other data that contribute to incidental recharge within the service area. The Department will review the data and take them under consideration.

APPENDIX 5-J (continued)
INDIVIDUAL INCIDENTAL RECHARGE FACTOR CALCULATION
PHOENIX ACTIVE MANAGEMENT AREA

Calculations:

1. Turf

Annual Incidental Recharge (AF)	=	Total Annual Water Used (AF)	-	[Turfed Acres x Consumptive Use AF/Ac.]

2. Artificial Lakes

Annual Incidental Recharge (AF)	=	Total Annual Water Used (AF)	-	[Lake Acres x Evaporation Rate AF/Ac.]

3. Septic Systems

Annual Incidental (AF)	=	Total Acres of Septic System	x	Number of Septic Systems per Acre	x	Total Annual Water Use per Household (AF)	x	Percent Water Returned for Recharge

4. **Maximum Estimated Annual Incidental Recharge (AF)** = #1 + #2 + #3 + other data approved by ADWR

5. **Incidental Recharge Factor** = $\frac{\text{Annual Incidental Recharge (\#4)}}{\text{Total Annual Volume of Water Pumped and Received.}}$

AF = acre-feet

APPENDIX 5-K
RESIDENTIAL COMPONENT GALLONS PER CAPITA PER DAY CALCULATION DESCRIPTION
PHOENIX ACTIVE MANAGEMENT AREA

A. Residential:

1. Existing Residential Allotment
   a. Determine Base Year 2000 Single Family Population
      Determine Base Year 2000 Multifamily Population
      Sum of Base Year 2000 Single Family and Multifamily Population

   b. Multiply Base Year 2000 Residential Population by the Existing Residential GPCD Component Requirement (Appendix 5F), multiply by 365 days and divide the product by 325,851.

   c. Result is a volumetric allotment, in acre-feet, for the Existing Residential Allotment with expected GPCD reductions included in the annual requirement calculation.

2. New Residential Allotment:
   a. Determine:
      New Single Family Housing Units added since June 30, 2000
      New Single Family Population (post - 2000) for the calendar year
      New Multifamily Housing Units added since June 30, 2000
      New Multifamily Population (post - 2000) for the calendar year

   b. Multiply New Single Family Housing Units and New Multifamily Housing Units by Exterior model GPHUD Rates for New Development:

Single Family	=	178 GPHUD
Multifamily	=	77 GPHUD

      Multiply the sum of the results by 365 days and divide the product by 325,851.

   c. Multiply the sum of the New Single Family Population and the New Multifamily Population by the Interior model GPCD rate of 57 for new residential development. Multiply the result by 365 days and divide the product by 325,851.

   d. The sum of the results in paragraphs b. and c. is the annual volumetric allotment in acre-feet for the New Residential Allotment.

3. **Residential Allotment**
   a. Add together the Existing Residential Allotment to the New Residential Allotment to calculate the **Residential Allotment**, acre feet.

APPENDIX 5-L
LOW WATER USE/DROUGHT TOLERANT PLANT LIST
PHOENIX ACTIVE MANAGEMENT AREA

The Low Water Use/Drought Tolerant Plant List for the Phoenix AMA is filed in the Department's Phoenix AMA office. A copy of the list effective as of the date of this plan follows in this Appendix. Since the list may be amended using the procedure described below, a current list is available upon request from the Phoenix AMA office or from the Department's public information officer in Phoenix.

PROCEDURE FOR MODIFICATION OF LOW WATER USE/DROUGHT TOLERANT PLANT LIST FOR THE PHOENIX ACTIVE MANAGEMENT AREA

A. A person who seeks to add a plant or plants to the Low Water Use/Drought Tolerant Plant List for the Phoenix AMA or to delete a plant or plants from the list may apply at any time to the director for a modification of the list. The application shall be made on a form prescribed and furnished by the director.

B. The director shall review each request for a modification of the Low Water Use/Drought Tolerant Plant List. The director may request additional information from the applicant and may seek information from other sources as may be necessary to determine whether the list should be modified.

C. If the director approves the addition of a plant to the Low Water Use/Drought Tolerant Plant List, the director shall place the plant on a supplemental list that shall be considered an addendum to the Low Water Use/Drought Tolerant Plant List. The supplemental list shall be available upon request from the Department's public information officer or the office of the Phoenix AMA.

D. If the director approves the deletion of a plant from the Low Water Use/Drought Tolerant Plant List, the director shall delete the plant from the list.

E. The director shall conduct an annual review of the Low Water Use/Drought Tolerant Plant List and issue a modified plant list no later than August 15 of the following year. As a result of the review, the director may add plants to the list, delete plants from the list, or both.

APPENDIX 5-L *(continued)*
LOW WATER USE/DROUGHT TOLERANT PLANT LIST
PHOENIX ACTIVE MANAGEMENT AREA

This list was compiled by the Department in cooperation with experts from the Desert Botanical Garden, Arizona Department of Transportation, and various nurserymen and landscape specialists from the Phoenix AMA. Individuals wishing to add low water use plants to this list or delete plants from the list may submit information to the director of the Department of Water Resources for consideration. The director will amend the list as appropriate.

TREES

Botanical Name	**Common Name**
Acacia spp.	Acacia, Wattle
Bauhinia congesta	Anacacho Orchid Tree
Brachychiton populneus	Bottle Tree
Brahea spp.	Fan Palm
Bursera spp.	Elephant Tree
Butia capitata	Jelly Palm
Caesalpinia spp.	Bird-of-Paradise
Callistemon viminalis	Weeping Bottlebrush
Canotia holacantha	Crucifixion Thorn
Casuarina spp.	Beefwood
Catalpax tashkentensis	Chilitapa
Celtis reticulata	Western Hackberry
Ceratonia siliqua	St. John's Bread Tree, Carob Tree
Cercidium spp.	Palo Verde
Cercis canadensis var. texensis	Texas Redbud
Cercis canadensis var. mexicana	Mexican Redbud
Chamaerops humilis	Mediterranean Fan Palm
Chilopsis linearis	Desert-willow
Cupressus arizonica	Arizona Cypress
Cupressus sempervirens	Italian Cypress
Dalbergia sissoo	Sissoo Tree
Eucalyptus spp.	Eucalyptus
Geijera parviflora	Australian-willow
Gleditsia triacanthos	Honey Locust
Holacantha emoryi (Castela emoryi)	Crucifixion Thorn
Leucaena retusa	Golden Ball Lead Tree
Lysiloma spp.	Desert-fern
Olea europaea	Olive
Olneya tesota	Ironwood
Parkinsonia aculeata	Mexican Palo Verde, Jerusalem Thorn
Phoenix canariensis	Canary Island Date Palm
Phoenix dactylifera	Date Palm
Abatilon palmeri	Superstition Mallow
Acacia spp.	Acacia, Wattle
Pinus canariensis	Canary Island Pine

Botanical Name	*Common Name*
Pinus eldarica	Afghan Pine
Pinus halepensis	Aleppo Pine
Pinus pinea	Italian Stone Pine
Pinus roxburghii	Chir Pine
Pistacia spp.	Pistachio
Pithecellobium spp.	Ebony
Pittosporum phillyraeoides	Willow Pittosporum
Prosopis spp.	Mesquite
Quercus spp.	Oak
Rhus lancea	African Sumac
Rhus lanceolata	Prairie Flameleaf Sumac
Schinus molle	California Pepper Tree
Schinus terebinthifolius	Brazilian Pepper Tree
Sophora secundiflora	Texas Mountain-laurel, Mescal Bean
Tamarix aphylla	Athel Tree
Tipuana tipu	Tipu Tree
Ungnadia speciosa	Mexican-buckeye
Ulmus parvifolia cv. *'Sempervirens'*	Evergreen Elm
Vitex agnus-castus	Chaste Tree
Washingtonia spp.	Desert Fan Palm
Xylosma congestum	Xylosma
Ziziphus jujuba	Chinese Jujube

SHRUBS

Aloysia spp.	Beebrush
Ambrosia ambrosioides	Canyon Ragweed
Ambrosia deltoidea	Triangleleaf Bur-sage
Ambrosia dumosa	White Bur-sage
Anisacanthus spp.	Desert Honeysuckle
Artemisia spp.	Sagebrush
Asclepias linaria	Pine-leaf Milkweed
Asclepias subulata	Desert Milkweed
Atriplex spp.	Saltbush
Baccharis spp.	Desert Broom
Bauhinia congesta (lunarioides)	Anacacho
Bauhinia macaranthera	Orchid Tree
Bauhinia ramosissima	Orchid Tree
Berberis haematocarpa	Red Barberry
Berberis trifoliolota	Agarita
Buddleia marrubifolia	Woolly Butterfly Bush
Caesalpinia spp.	Bird-of-Paradise
Calliandra californica	Baja Red Fairy Duster
Calliandra eriophylla	Pink Fairy Duster
Calliandra peninsularis	Fairy Duster
Callistemon citrinus	Lemon Bottlebrush
Callistemon phoeniceus	Salt Resistant Bottlebrush
Callistemon viminalis cv.*'Captain Cook'*	Dwarf Bottlebrush
Calothamnus spp.	Net Bush
Cassia (Senna) spp.	Cassia
Celtis pallida	Desert Hackberry
Chrysactinia mexicana	Damianita
Chrysothamnus nauseosus	Rabbit Brush
Cistus spp.	Rockrose
Condalia globosa	Bitter Condalia
Convolvulus cneorum	Bush Morning Glory, Silverbush
Cordia boissieri	Anacahuita
Cordia parvifolia	Little Leaf Cordia
Dalea spp.	Smoketree, Indigo Bush
Dodonaea viscosa	Hopbush
Encelia spp.	Brittlebush

Botanical Name	*Common Name*
Ephedra spp.	Mormon-tea
Eremophila spp.	Emu Bush
Ericameria laricifolia	Turpentine Bush
Ericameria linearifolia	Turpentine Bush
Eriogonum spp.	Buckwheat
Erythrina flabelliformis	Southwest Coralbean
Euphorbia antisyphilitica	Wax Plant, Candelilla
Euphorbia rigida	Euphorbia
Forestiera neomexicana	Desert Olive
Fraxinus greggii	Littleleaf Ash
Genista hispanica	Spanish Broom
Gutierrezia microcephala	Snakeweed
Hamelia patens	Fire Bush
Hyptis emoryi	Desert-lavender
Jasminum mesnyi	Primrose Jasmine
Jatropha spp.	Limberbush
Juniperus chinensis varieties	Juniper
Justicia spp.	Mexican Honeysuckle, Chuparosa
Krameria parvifolia	Ratany
Lantana camara	Bush Lantana
Larrea tridentata	Creosote Bush
Leucophyllum spp.	Texas Sage, Texas Ranger
Lippia (berlandieri)	Mexican Oregano
Lycium spp.	Wolfberry
Maytenus phyllanthoides	Mangle Dulce
Melaleuca spp.	Australian Myrtle
Mimosa biuncifera	Wait-a-Minute Bush
Mimosa dysocarpa	Velvet Pod Mimosa
Myrtus communis	True Myrtle, Roman Myrtle
Myrtus communis cv. *'Boetica'*	Twisted Myrtle
Myrtus communis cv. *'Compacta'*	Dwarf Myrtle
Nandina domestica	Heavenly-bamboo
Nerium oleander varieties	Oleander
Perovskia atriplicifolia cv. *`Heavenly Blue'*	Russian Sage
Plumbago scandens	Plumbago
Punica granatum varieties	Pomegranate
Pyracantha spp.	Pyracantha, Fire-thorn
Rhus choriophylla	Mearns Sumac
Rhus microphylla	Desert Sumac
Rhus ovata	Sugarbush
Rhus trilobata	Skunkbush
Rhus virens	Evergreen Sumac
Rosmarinus officinalis	Bush Rosemary
Ruellia californica	Ruellia
Ruellia peninsularis	Ruellia
Salvia spp.	Sage
Simmondsia chinensis	Jojoba
Solanum xanti	Solanum
Sophora arizonica	Arizona Sophora
Sophora formosa	Sophora
Tecoma stans	Yellowbells
Tecomaria capensis	Cape Honeysuckle
Teucrium fruticans	Bush Germander
Thamnosma montana	Turpentine Broom
Thevetia peruviana	Yellow Oleander
Trixis californica	Trixis
Vauquelinia spp.	Rosewood
Viguiera deltoidea	Golden Eye
Viguiera tomentosa	Golden Eye
Westringia rosmariniformis	Westringia
Ziziphus obtusifolia	Greythorn

Botanical Name	*Common Name*

GROUNDCOVERS

Acacia spp.	Acacia
Asparagus densiflorus cv. *'Sprengeri'*	Sprenger Asparagus
Atriplex spp.	Saltbush
Baccharis spp.	Desert Broom, Coyote Bush
Clianthus formosus	Sturt's Desert Pea
Convolvulus mauritanicus	Ground Morning Glory
Dalea spp.	Indigo Bush
Gazania spp.	Gazania
Lantana montevidensis	Trailing Lantana
Myoporum parvifolium	Myoporum
Eschscholzia mexicana	Mexican Gold Poppy
Oenothera berlandieri	Mexican Evening Primrose
Oenothera stubbei	Saltillo Primrose
Pentzia incana	Karoo Bush
Rosmarinus officinalis cv.*'Prostratus'*	Prostrate Rosemary
Salvia chamaedryoides	Blue Sage
Salvia farinacea	Mealy Cup Sage
Santolina chamaecyparissus	Lavender Cotton
Santolina virens	Green Santolina
Sesuvium verrucosum	Sea Purslane
Teucrium chamaedrys cv. *`Prostrata'*	Germander
Verbena bipinnatifida	Verbena
Verbena peruviana	Peruvian Verbena
Verbena tenera	Moss Verbena
Verbena rigida	Sandpaper Verbena
Wedelia trilobata	Yellow Dot

SUCCULENTS/ACCENTS

Agave spp.	Century Plant, Agave
Aizoaceae spp.	Ice Plant Family
Aloe spp.	Aloe
Bulbine frutescens	Bulbine
Cactaceae	Cactus Family
Dasylirion spp.	Desert Spoon
Fouquieria spp.	Ocotillo
Hesperaloe spp.	Hesperaloe
Manfreda maculosa	Manfreda
Nolina spp.	Bear-grass
Pedilanthus macrocarpus	Lady Slipper
Yucca spp.	Yucca

ANNUAL WILDFLOWERS

Abronia villosa	Sand-verbena
Argemone pleiacantha	Prickly-poppy
Camissonia brevipes	Yellow Cups
Camissonia cardiophylla	Heart-leaved Primrose
Catharanthus roseus	Madagascar Periwinkle
Centaurea rothrockii	Basket Flower
Cirsium neomexicanum	Thistle
Clarkia amoena	Farewell-to-Spring
Collinsia heterophylla	Chinese-houses
Coreopsis bigelovii	Desert Coreopsis
Cosmos spp.	Cosmos
Dimorphotheca spp.	African Daisy
Eriastrum diffusum	Prickly Stars
Eriophyllum lanosum	Woolly Daisy
Eriophyllum wallacei	Woolly Daisy

Botanical Name	*Common Name*
Eschscholzia californica	California Poppy
Euphorbia heterophylla	Painted Spurge
Gaillardia pulchella	Fire Wheel, Blanket Flower
Geraea canescens	Desert Sunflower
Gilia leptantha	Showy Blue Gilia
Gomphrena globosa	Globe Amaranth
Helianthus annuus	Wild Sunflower
Helichrysum bracteatum	Everlasting Daisy
Helipterum spp.	Helipterum
Ipomoea cristulata	Morning Glory
Ipomoea leptotoma	Morning Glory
Kallstroemia grandiflora	Arizona poppy
Lasthenia chrysostoma (Baeria chrysostoma)	Goldfield
Layia platyglossa	Tidy Tips
Lesquerella gordonii	Yellow Blanket
Linaria spp.	Toadflax
Linum grandiflorum cv. 'Rubrum'	Red Flax
Lupinus arizonicus	Arizona Lupine
Lupinus densiflorus	Lupine
Lupinus sparsiflorus	Desert Lupine
Lupinus succulentus	Arroyo Lupine
Machaeranthera canescens (Aster bigelovii)	Blue Aster
Machaeranthera tanacetifolia (Aster)	Purple Aster, Tahoka Daisy
Matricaria grandiflora	Pineapple Weed
Matthiola longipetala cv. 'Bicornis'	Evening Scented Stock
Mentzelia spp.	Blazing Star
Mimulus bigelovii	Bigelow's Monkeyflower
Mohavea confertiflora	Ghost Flower
Monarda austromontana	Bee Balm
Monoptilon bellioides	Belly Flower
Nama demissum	Purple Mat
Nama hispidum	Purple Mat
Nemophila maculata	Five Spot
Nemophila menziesii	Baby Blue Eyes
Oenothera deltoides	Birdcage Evening Primrose
Oenothera primiveris	Evening Primrose
Orthocarpus purpurascens	Owl's Clover
Papaver rhoeas	Shirley Poppy
Pectis papposa	Chinch Weed
Perityle emoryi	Rock Daisy
Phacelia spp.	Scorpion Weed
Plantago spp.	Indian-wheat
Platystemon californicus	Cream Cups
Proboscidea parviflora	Devil's Claw
Rafinesquia neomexicana	Desert-chicory
Salvia columbariae	Chia
Sisymbrium ambiguum	Purple Rocket
Solanum xanti	Solanum
Tithonia rotundifolia	Mexican Sunflower
Ursinia spp.	Ursinia
Verbesina encelioides	Golden Crown Beard
Viguiera annua	Golden Eye

PERENNIAL WILDFLOWERS

Allionia incarnata	Trailing Windmills
Amsonia palmeri	Amsonia
Anigozanthos spp.	Kangaroo-paw
Anisodontea hypomandrum	African Mallow
Arctotis spp.	African Daisy
Argemone munita	Prickly Poppy

Botanical Name	*Common Name*
Argemone platyceras	Prickly Poppy
Bahia absinthifolia	Bahia
Baileya multiradiata	Desert Marigold
Berlandiera lyrata	Chocolate Flower
Castilleja chromosa	Indian Paintbrush
Castilleja lanata	Indian Paintbrush
Datura inoxia	Sacred Datura, Jimsonweed
Delphinium amabile	Larkspur
Delphinium scaposum	Barestem Larkspur
Dichelostemma pulchellum	Bluedicks
Dyssodia acerosa	Dyssodia
Dyssodia pentachaeta	Dyssodia
Erigeron divergens	Spreading Fleabane
Eupatorium greggii	Eupatorium
Evolvulus arizonicus	Arizona Blue Eyes
Gaura lindheimeri	Desert Orchid
Hesperocallis undulata	Ajo Lily
Hibiscus coulteri	Desert Rose Mallow
Hymenoxys acaulis	Angelita Daisy
Ipomopsis longiflora	Pale Blue Trumpets
Justicia sonorae	Sonoran Justicia
Linum lewisii	Blue Flax
Lotus rigidus	Desert Rock Pea
Machaeranthera gracilis	Yellow Aster
Machaeranthera tortifolia	Mohave Aster
Melampodium leucanthum	Blackfoot Daisy
Mirabilis multiflora	Desert Four O'Clock
Oenothera caespitosa	Tufted Evening Primrose
Penstemon spp.	Penstemon
Portulacaria afra	Elephants Food
Proboscidea altheaefolia	Devil's Claw
Psilostrophe cooperi	Paperflower
Psilostrophe tagetina	Paperflower
Ratibida columnaris	Mexican Hat, Coneflower
Romneya coulteri	Matilija Poppy
Senna covesii (Cassia covesii)	Desert Senna
Sphaeralcea spp.	Globe-mallow
Stachys coccinea	Red Mint, Betony
Tagetes spp.	Marigold
Verbena gooddingii	Goodding Verbena
Zephryanthes spp.	Rain Lily
Zinnia acerosa	Desert Zinnia
Zinnia grandiflora	Rocky Mountain Zinnia

GRASSES

Aristida purpurea	Purple Three-awn
Bouteloua aristidoides	Six-weeks Grama
Bouteloua curtipendula	Side Oats Grama
Bouteloua gracilis	Blue Grama
Erioneuron pulchellum	Fluffgrass
Hilaria rigida	Big Galleta
Muhlenbergia capillaris	Gulf Muhly
Muhlenbergia dumosa	Giant Muhly
Muhlenbergia emersleyi	Bull Grass
Muhlenbergia lindheimeri	Lindheimer Muhly
Muhlenbergia porteri	Bush Muhly
Muhlenbergia rigida	Deer Grass
Pennisetum setaceum cv. *'Cupreum'*	Purple Fountain Grass
Schismus barbatus	Mediterranean Grass
Setaria macrostachya	Plains Bristlegrass

Botanical Name	*Common Name*
Sporobolus cryptandrus	Sand Dropseed
Trichachne californica	Cottontop

VINES

Antigonon leptopus	Coral Vine, Queens Wreath
Bougainvillea spp.	Bougainvillea
Callaeum macroptera (Mascagnia macroptera)	Yellow Orchid Vine
Campsis radicans	Common Trumpet Creeper
Cissus trifoliata	Grape Ivy
Clematis drummondii	Virgin's Bower
Hardenbergia comptoniana	Wild Wisteria
Kennedia nigricans	Black Yellow Vine
Macfadyena unguis - cati	Cat's Claw
Mascagnia lilacina	Purple Mascagnia
Maurandya antirrhiniflora	Snapdragon Vine
Maurandya wislizeni	Snapdragon Vine
Merremia aurea	Yuca
Podranea ricasoliana	Pink Trumpet Vine
Rhynchosia texana	Rosary Bead Vine
Rosa banksiae	Lady Bank's Rose
Solanum jasminoides	Potato Vine

APPENDIX 5-M
THIRD MANAGEMENT PLAN
LOST & UNACCOUNTED FOR WATER REQUIREMENTS

Lost & Unaccounted For Water Includes:

Leaks:
- Distribution Lines
- Sewer Lines
- Storage Tanks
- Storage Ponds
- Hydrants
- Other

Breaks:
- Distribution Lines
- Sewer Lines
- Mains
- Hydrants
- Other

Measurement Errors:
- Meter Under/Over-Registration
- Source Meter Errors
- Flumes/Weirs Errors

Evaporation

Illegal Connections/Water Theft

Phreatophyte Uses

****

Water System Uses Include:

- Residential Metered Deliveries
- Non-Residential Metered Deliveries
- Standpipe Uses
- Fire Flow [1]
- Hydrant Meter Reading
- Hydrant Flow Tests [1]
- Fire Sprinkler System Flow Tests [1]
- Construction [1]
- Dust Control [1]
- Line Flushing (distribution, sewer, or treatment facility) [1]
- Street Cleaning [1]
- Storm Drain Flushing [1]
- Water Tests & Pressure Tests [1]
- Well Purging

[1] Estimates can be provided, using a method approved by the director. Documentation must be submitted with annual report.